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Predecisional Environmental Assessment

Sleeping Giant Ski Area Development Projects

**Wapiti Ranger District, Shoshone National Forest
Park County, Wyoming**

T52N R109W Portions of Sections 3, 10, 11, 12, 13, 14, and 15

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SUMMARY

The Shoshone National Forest proposes to evaluate the authorization of new facilities and activities associated with the special use permit issued to Yellowstone Recreations, LLC to operate the Sleeping Giant Ski Area (Sleeping Giant). Sleeping Giant proposes the following actions for Forest Service special uses approval:

- Construct a zip line course within the existing ski area footprint for summer use
- Construct a tubing hill on the western edge of skiable terrain

The project area is located approximately 50 miles west of Cody, WY at 348 North Fork Highway (State Highway 14/16/20), and is within the Wapiti Ranger District, Shoshone National Forest, Wyoming. This action is needed because Sleeping Giant has realized financial and structural necessities associated with maintaining a viable operation and has proposed the following objectives to the Forest Service:

- Expand facility recreation opportunities to the summer months when tourism traffic is at its highest
- Develop additional winter recreation opportunities to expand appeal to different segments of the public

The proposed action may have some local or individual level impacts, but would not significantly impact any resource area or issue raised during scoping.

In addition to the proposed action (Alternative 2), the Forest Service also evaluated the following alternatives:

- Alternative 1: No Action
- Alternative 3: Modified Proposed Action – This action is essentially the same as the proposed action save the substitution of a suspension bridge in place of one of the proposed zip lines.

Based upon the effects of the alternatives, the responsible official will decide among the alternatives set forth in this document, which will be recorded in the Decision Notice and Finding of No Significant Impact.

CHAPTER 1: INTRODUCTION

1.1 Document Structure

The Forest Service has prepared this Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This EA discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into five parts:

- *Introduction:* The section includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.
- *Comparison of Alternatives, including the Proposed Action:* This section provides a more detailed description of the agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on significant issues raised by the public and other agencies. This discussion also includes possible mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative.
- *Affected Environment and Environmental Consequences:* This section describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by resource area. Within each section, the affected environment is described first, followed by the effects of the No Action Alternative that provides a baseline for evaluation and comparison of the other alternatives that follow.
- *Agencies and Persons Consulted:* This section provides a list of preparers and agencies consulted during the development of the environmental assessment.
- *Appendices:* The appendices provide more detailed information to support the analyses presented in the environmental assessment.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Wapiti Ranger District Office in Cody, Wyoming.

1.2 Background

Yellowstone Recreations, LLC operates the facilities at the Sleeping Giant Ski Area (Sleeping Giant) approximately 50 miles west of Cody, WY and 5 miles east of Yellowstone National Park (Figure 1.1) under a term special use permit through the Shoshone National Forest that covers 1,147 acres of Forest Service lands.

Sleeping Giant first opened for business in 1937, operating until 2004, when it was closed. The facility was purchased in 2008 and resumed operations in 2009 under current ownership. The ski hill received more than 10,000 skiers in the 2010-2011 season of operation. Current facilities include:

- Two aerial ski lifts and one surface lift
- 180 acres of skiable terrain
- Structures: 4,500 square foot base lodge facility, 3,200 square foot shop, 196 square foot snowmobile shed, 144 square foot ski patrol cabin, and lift operating shacks
- Septic and groundwater systems
- Access bridge over the Shoshone River
- Parking facilities

In early 2012, Sleeping Giant presented a proposal to the Forest Service to expand existing facilities. Since resuming operations under new ownership three years ago, Sleeping Giant has considered the financial and structural needs of the resort to maintain a viable operation. Due to the relatively small size of the local community and increasing operational costs, Sleeping Giant realized the need to find additional income.

Previously, ski hills operated on Forest Service lands were not authorized to conduct summer operations under a ski area permit. In November of 2011 the Ski Area Opportunity Act was passed, allowing summer uses and opening the way for consideration of proposals such as the one analyzed in this EA.

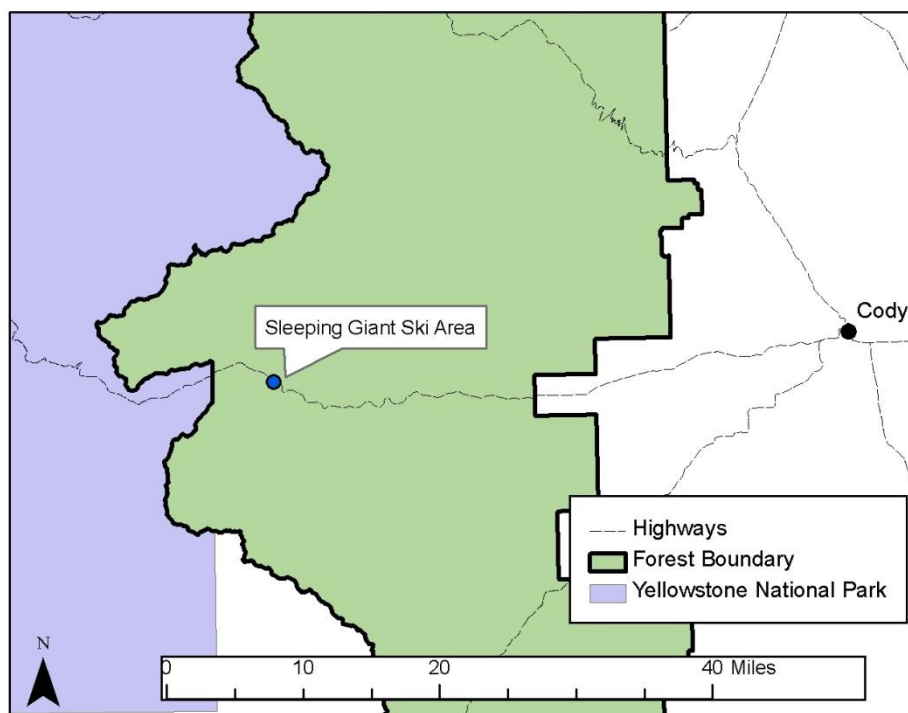


Figure 1.1. Project vicinity map.

1.3 Forest Plan Direction

The Shoshone National Forest Land and Resource Management Plan (1986) provides direction specific to the Sleeping Giant Ski Area. The developed portion of the Sleeping

Giant Ski Area is listed under Management Area 1B. This management designation emphasizes management of existing developed and inventoried sites for downhill skiing opportunities. Management integrates ski hill development with other resources.

Relevant Management Area direction includes:

- Visual resources are managed so that the character is one of forested areas interspersed with openings of varying widths and shapes. Facilities may dominate, but harmonize and blend with the natural setting.
- Design and locate improvements on winter sport sites to provide safety to users and to harmonize with the natural environment.
- Manage forest cover types on the permitted area to enhance visual quality, diversity, and recreation opportunities, and to provide for a healthy forest cover in existing and proposed winter sports sites.
- Manage other resources in a manner consistent or compatible with adjacent management areas.

1.4 Purpose and Need for Action

Sleeping Giant has communicated a need to realize a financially stable resort offering services to the public which encourage the use and appreciation of National Forest System lands. The financial and structural needs associated with maintaining a viable operation, as determined by Sleeping Giant, have led to the following objectives, in accordance with their Master Development Plan:

- Expand facility recreation opportunities to the summer months when tourism traffic is at its highest.
- Develop additional winter recreation opportunities to expand appeal to different segments of the public.

The purpose of this environmental analysis is to evaluate the request by Sleeping Giant to construct and operate a summer season zip line and winter season tubing area to meet the above objectives. It also provides federal, state, and local governments and the public adequate notice and opportunity to comment on the proposed use of National Forest Service lands. The authorizing officer will review the potential effects of the actions proposed in the application as disclosed in this EA, the supporting documentation in the project planning record, and public comment to determine if implementation of the proposed actions will be allowed.

1.5 Proposed Action

In order to meet the above objectives, Sleeping Giant proposes the following actions (Alternative 2) for Forest Service special uses approval:

- The construction of a zip line course within the existing ski area footprint for summer use.
- The construction of a tubing hill on the western edge of skiable terrain.

Zip lines. The proposed course starts from the Midway unload of the Sheepsteater ski lift (west lift) and ends at the base of the Cub Tow carpet near the lodge. This course has seven zip lines with eight associated structures and no additional elements/features. Users would access the course by utilizing the Sheepsteater lift and unloading at the Midway unloading point.

Snow tubing area. Sleeping Giant proposes a tubing hill on the western edge of the skiable terrain for the winter recreation for non-skiers/snowboarders. The snow tubing area would require an expansion of snow making capabilities. Sleeping Giant also proposes to install a rope tow or other ground lift to move tubers to the top of runs.

Caretakers' Housing. The original scoping document also called for a caretakers' residence with a lower level sleeping expansion to be constructed near the existing storage building. Since the scoping period, Sleeping Giant has received a donated cabin. This cabin is consistent with the manager's residence that was approved under the Sleeping Giant Ski Area Improvements NEPA and Decision Memo, completed in 2007. Since the structure to be put in place no longer represents an expansion from the residence previously evaluated and approved through the NEPA process, we will not mention it further in this document.

1.6 Public Involvement

The proposal was listed in the Schedule of Proposed Actions on April 2, 2012. The proposal was provided to the public and other agencies for comment during scoping April 18 through May 18, 2012. In addition, as part of the public involvement process, the agency held a public meeting to answer questions and provide additional opportunities to comment on May 8, 2012.

Using the comments from the public, other agencies, and nonprofit organizations (see *Issues* section), the interdisciplinary team developed a list of issues or concerns to address.

1.7 Issues

The Forest Service separated the issues generated internally and received during scoping into two groups: significant and non-significant issues. Significant issues were defined as those directly or indirectly brought up by implementing the proposed action. Non-significant issues were identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council on Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, "...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)..." A complete list of comments and their disposition can be found in Appendix B.

The Forest Service identified the following topics (summarized) raised during scoping as significant issues. These issues include:

Vegetation (see Chapter 3)

- There are concerns about the possible spread of noxious weeds associated with the proposed project.
- There are concerns about the possible impact of the proposed project on sensitive plants.

Wildlife (see Chapter 3)

- There are concerns about the effects of the proposed project on grizzly bears, and whether the proposal is consistent with the Grizzly Bear Conservation Strategy in the Yellowstone Ecosystem.
- There are concerns about the impact of the proposed project on Threatened and Endangered, Sensitive, and Management Indicator species.

Watershed Resources (see Chapter 3)

- There is a concern about the impact of the proposed projects on the local watershed.
- There is a concern about the soil and ground disturbance associated with the project and the impact of ground disturbance on the local watershed.
- There are concerns about soil stability and disturbance associated with project implementation.

Aquatic Resources (see Chapter 3)

- There is a concern about the impact of the proposed project on fisheries resources.

Fire and Fuels (see Chapter 3)

- There is a concern about the probability of fire in the area and the potential direct impact of fire on the proposed structures, insurability, and financial viability.

Recreation (see Chapter 3)

- There is a concern about the auditory impact of the proposed zip line (voice and 'zip' noise).
- There is a concern about the impact of the proposed tubing area on the existing Nordic ski trail and skiing opportunities.

Socio-Economic Resources (see Chapter 3)

- There is a concern about the economic viability of the ski area.

Visuals (see Chapter 3)

- There are concerns about the visual and aesthetic impacts of the proposed zip line and how it fits with the character of the landscape.

1.8 Decision Framework

The Forest Supervisor of the Shoshone National Forest is the deciding official for this proposal and will review the proposed action, public comments, and resource analyses.

Given the purpose and need, the deciding official reviews the proposed action and the other alternatives in order to make the following decisions:

The Responsible Official has authority to choose the no action alternative, the proposed action, or portions of the proposed action or the modified proposed action, and to implement the project according to the decision. Such decisions and the rationale for the decision will be documented in the project Decision Notice and Finding of No Significant Impact. The decision may include additional project design/mitigation measures, permit stipulations, construction modifications and conditions and specify how the project would be monitored over the life of the permit to ensure compliance with the terms of the decision.

CHAPTER 2: ALTERNATIVES

This chapter describes and compares the alternatives considered for the Sleeping Giant Development Projects. It includes a description and map of each alternative considered. This section also presents the alternatives in comparative form, defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public. Some of the information used to compare the alternatives is based upon the design of the alternative and some of the information is based upon the environmental, social, and economic effects of implementing each alternative.

2.1 Alternatives Considered and Eliminated from Study

The IDT, in consultation with Sleeping Giant, considered several alternatives to the proposed action. The following are brief descriptions of alternatives eliminated from detailed study and the reasons for eliminating them.

Alternative summer activities. Alternative summer uses of Sleeping Giant including mountain biking or an alpine slide were considered, but they were either not economically viable, thus not meeting the stated purpose and need, or would have greater potential environmental consequences than the proposed action.

Removing the zip line from consideration. From a public perspective, the proposed zip line is the most controversial issue. The zip line is the portion of the proposed project that would potentially increase revenue to the greatest extent, thus eliminating it from consideration would not meet the stated purpose and need.

2.2 Alternatives Considered and Analyzed in Detail _____

2.2.1 Alternative 1

No Action

NEPA regulations require the Forest Service to identify a No Action alternative and use it as a baseline for comparing the environmental consequences of the other alternatives (40 CFR 1502.14[d] and FSH 1909.15, 14.1). Under the No Action alternative, current

management plans would continue to guide management of the project area. No zip line or snow tubing area would be implemented to accomplish project objectives.

2.2.2 Alternative 2

Proposed Action- Sleeping Giant Ski Area Development Projects

The proposed action consists of two parts:

- The construction of a zip line course within the existing ski area footprint for summer use.
- The construction of a tubing hill on the western edge of skiable terrain.

Both of the proposed actions would occur within the existing developed footprint of the ski area.

Zip Line: Zip lines are systems of anchored cables on an incline. Users are attached to a pulley and harness system which allows them to ride down the incline suspended below the cable. The proposed zip line course would consist of 7 individual zip lines anchored to 8 towers. Towers serve the dual purposed of anchoring the lines and providing launch and landing platforms for riders. The proposed zip lines would run in the area between the existing ski lifts (Sheepeater on the west and Bighorn on the east, Figure 2.1). The area under the zip line course would be approximately 19 acres with an on-the-ground footprint of 800 square feet.

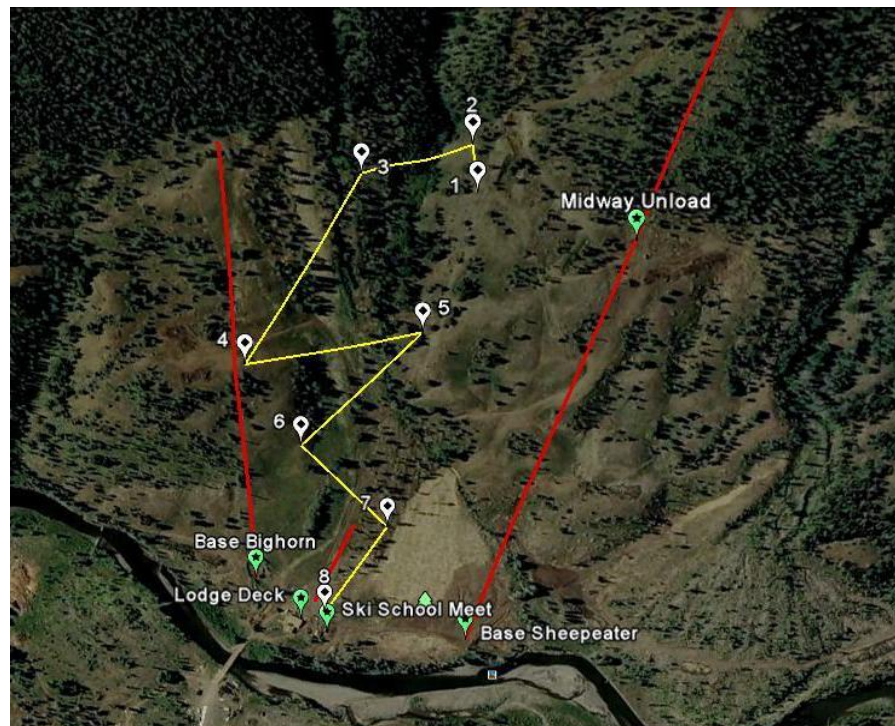


Figure 2.1. Position of the proposed zip line course relative to the existing ski lifts.

Construction: If approved, construction of the proposed zip line could occur as early as 2013. Total construction time would take approximately 2 months and would occur outside of the April 1-June 15 window in order to protect spring grizzly bear habitat. The towers would be placed outside of the existing ski runs to reduce the potential for collisions during the ski season. Intensive geotechnical surveys would be completed to locate the towers in the most stable locations possible. The first construction activity would be to use geobores to bore holes for the towers. Geotechnical drilling would need access to water, preferably sourced from the North Fork Shoshone River. The concrete bases would be 10 feet by 10 feet and would be poured after boring was complete. The associated ground disturbance would be 20 feet by 20 feet and would be revegetated following construction. The proposed action would cut approximately 10-20 trees for the zip line location.

The zip line tower structures would be constructed from repurposed ski lift towers and would be essentially the same as the existing ski towers. They are made of steel and would be painted in a color that blends with the surrounding environment. The towers would come up the hill in one piece, using existing machinery and haul routes, and would be set with an excavator or boom truck. Tower heights would be between 8 and 45 feet leading to zip line grade of 5-9%.

Lines would be hung from designated anchor points. The cables strung between the two towers would be rubberized, minimizing auditory impacts. Each tower would have a platform for launches and landings. Ladders would be installed to access the course at the first and final tower. As needed, safety markings will be painted on the decks to designate no-stand zones, areas designated for safety line use, areas of caution, and ramp markings. Padding will be installed on launch and landing areas. Catch rope devices will be included for each zip line to stop riders.

The project would also include modification of the existing Sheepeater ski lift to allow for safe summer use (see project design features).

Operation: The proposed zip line would be operated June 15 through September 15 between the hours of 9:00am to 6:00pm. Daily maintenance checks would happen for one hour both before and after the operating period. Groups of guests would meet at the lodge and would receive information on both the zip line experience and bear awareness and safety. US Forest Service would provide information as needed for guides about grizzly bear issues and compliance with Forest Service regulations. Tours would not occur if there is a grizzly bear present on the ground. The annual summer zip line use would be capped at 5,360 riders to comply with grizzly bear mitigation measures.

Riders would access the proposed zip line course by riding the Sheepeater ski lift to the midway unload point. At this point they would walk approximately 300 yards east to the first tower, which they would access by ladder. Two guides (planned total of 5-6 guides would be employed initially) would accompany each group with one preceding the group down the zip line and one to follow the group. The group would proceed from zip line to zip line, exiting from the final tower by ladder near the lodge.

Riders who need to exit the zip line course at a point other than the entrance and exit ladders would have an opportunity to at the second tower or, in an emergency, could be evacuated by rope. All guides will be trained in the evacuation procedure and first aid.

Snow Tubing Area: Sleeping Giant proposes a 2.5 acre tubing hill on the western edge of the skiable terrain for the winter recreation for non-skiers/snowboarders (Figure 2.2). This would require an extension of the underground snowmaking system not greater than 2000 feet, expanding the snowmaking area by 300 feet. An enlargement of the water rights (increase in volume of water drawn seasonally) would be necessary. Power would be extended to the snowmaking/ground based lift from the current power source at the bottom of the Sheepeater ski lift. There would be four runs (2 longer, 2 shorter) between 400 and 600 feet in length at approximately a 20% grade, with a runout at the end of the course for safely slowing and stopping riders.

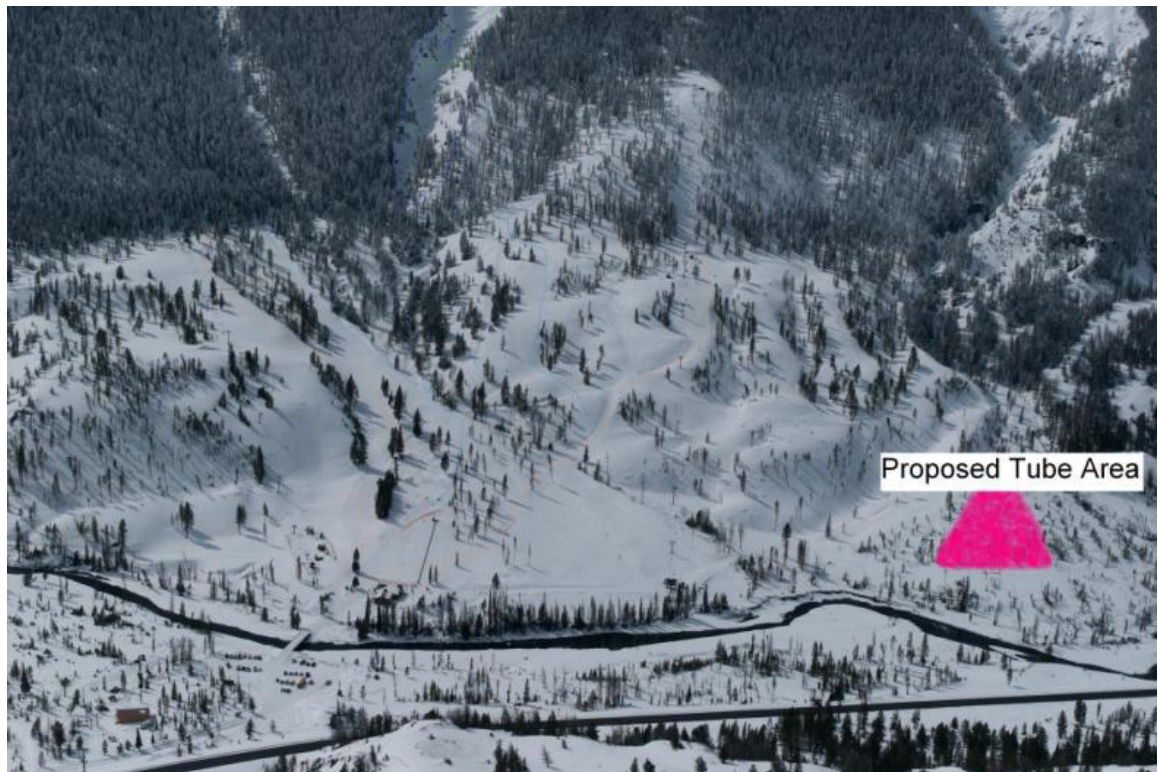


Figure 2.2. Proposed snow tubing area location.

Construction: Electricity and snowmaking line would be laid down along the existing access road, minimizing ground disturbance. The extended water line would be bored or trenched beneath the unnamed creek, and extend along the lower (northeast) and the northwest boundaries of the tubing area. Four snow making lances will be installed along the water lines on the tubing hill. Each lance will have a radius of approximately 40 feet.

The permitted volume of water being drawn from the existing point of diversion (instantaneous draw volume) is not being increased, but the points of use and the duration of the use are being enlarged.

A four foot (vertical) berm would be constructed on the river side of the tubing lanes to cant them away from the river and stop riders safely. Materials for the berm could be something other than earthen materials such as straw bales (certified weed free). The source of the earthen material has not been identified, but will be from a weed free approved source. To prepare the ground surface for the tubing hill, several stumps would need to be removed. Construction would also require the removal of 2-3 small trees (<6" DBH). A drain for the water line would be installed at the base of the Sheepeater ski lift. If permitted, construction would be considered for the 2013 -2014 winter season.

Operation: Snow tubing operations would happen during the same hours and season as ski hill operation. Riders would purchase tickets at the main lodge and walk from the lodge to the tubing hill, approximately 1100 feet. A walking lane that avoids the existing ski routes and Nordic ski trails would be designated. A removable structure, such as a yurt, may also be installed seasonally near the tubing area for tube storage and use as a warming hut. A simple ground transport mechanism will be used to transport recreationists from the bottom of the tubing hill to the top.

2.2.3 Alternative 3

Modified Proposed Action (zip line with a bridge)

The modified proposed action is identical to the proposed action except for the configuration of the proposed zip line course (Figure 2.3). There would be a swinging bridge placed between points 3a and 3b in place of a zip line directly from tower 2 to tower 3. This modification would adjust for geologic issues that may be associated with the proposed action. Construction and operation activities and schedules would be unchanged from the proposed action.

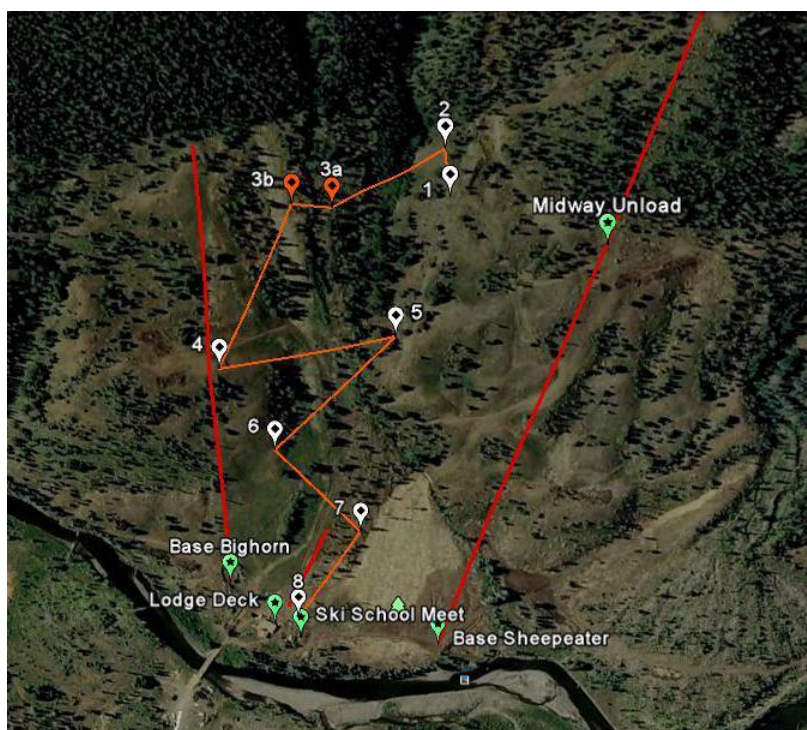


Figure 2.3. Alternative zip line/bridge course configuration.

2.3 Monitoring

Monitoring of project progress and compliance will be carried out through inspections associated with the special use permit issued to Yellowstone Recreations, LLC. Specialists who had significant input and concerns will monitor best management practice (BMP) implementation in order to identify areas that require improvement and set prescriptions to move them into compliance and towards desired conditions. A formal BMP review occurred when the ski area initially reopened and it identified sediment and vegetation management issues that have since been resolved or are improving.

2.4 Mitigation and Project Design Features

Project design features (PDFs) or mitigation measures would be applied to both Alternatives 2 and 3. These are appropriate actions or measures built into the alternatives to reduce adverse environmental impacts and maximize project benefits (40 CFR 1508.20). Mitigation measures and PDFs are guided by Forest Land and Resource Management Plan direction; relevant directives, agreements, strategies, and plans; research and monitoring studies; state and federal laws and regulations; the Watershed Conservation Handbook and best management practices; public comments; and interdisciplinary team recommendations.

National Best Management Practices (FS-990A)

Rec-10. Ski Runs and Lifts

- Locate ski runs and lifts on stable geology and soils to minimize risk of slope failures.
- Avoid wetlands and riparian areas when locating ski runs and lifts wherever practicable.
- Use applicable practices of Mechanical Vegetation Management Activities BMPs when clearing vegetation for ski runs and lift lines. Use yarding equipment suitable to the steepness of the terrain to avoid or minimize adverse effects to soil and water quality (see BMP Veg-1 [Vegetation Management Planning]).
- Use applicable practices of BMP Veg-2 (Erosion Prevention and Control) to provide erosion and storm water controls when constructing ski runs and lifts. Clear and construct ski runs and lift lines in sections to limit the area of exposed disturbed soil at any one time. Stabilize a completed section before beginning work on the next section.
- Avoid diverting streams and minimize disrupting swales, ephemeral channels, and wetlands.
- Minimize grading or recontouring of hill slopes to maintain intact soil horizons and infiltrative properties.
- Cut stumps flush with soil surface or grind in place instead of grubbing when clearing trees from ski runs wherever practicable.
- Use low-pressure construction and maintenance equipment whenever practicable to reduce surface impact on steep slopes.
- Stockpile biologically active topsoil removed during excavation for use in reclamation. Store stockpiled topsoil separately from other vegetative slash, soil, or rock and protect from wind and water erosion, unnecessary compaction, and contaminants.
- Use suitable species and establishment techniques to revegetate the site in compliance with local direction and requirements per FSM 2070 and FSM 2080 for vegetation ecology and prevention and control of invasive species.
- Maintain desired ground cover with irrigation, fertilization, or other treatments as necessary.
- Use suitable measures to direct overland flow on slopes into areas with intact soil horizons to encourage infiltration and disconnect overland flow from water bodies.
- Treat disturbed soil to promote onsite water capture and infiltration.
- Prohibit traffic on disturbed areas during periods of excessive soil moisture, precipitation, or runoff.
- Monitor revegetation response (height, root growth, ground coverage, etc.) in terms of its capacity to avoid or minimize erosion during runoff. Perform additional revegetation or erosion control as needed to protect water quality and soil integrity.

Rec-11. Ski Area Snowmaking

- Manage snowmaking and snow farming to avoid or minimize slope failures and gully erosion on the hill slopes and excessive bank erosion and sediment in receiving streams. Limit snowmaking on graded terrain to the extent practicable

to minimize surface runoff and subsequent erosion from reduced infiltration capacity.

- Use applicable practices of BMP WatUses-1 (Water Uses Planning) when authorizing snowmaking.
- Use applicable practices of BMP AqEco-3 (Ponds and Wetlands), BMP WatUses-4 (Water Diversions and Conveyances), and BMP WatUses-5 (Dams and Impoundments) when obtaining water and developing water storage facilities for snowmaking.
- Transport water to the slopes in the least disruptive manner. Use applicable practices of BMP Fac-9 (Pipelines, Transmission Facilities, and Rights-of-Ways) when constructing, maintaining, and operating pipelines.
- Design snowmaking systems to return runoff water to the source from which it was removed. Avoid inter-basin transfer of waters, where practicable, to maintain original duration, magnitude, and patterns of runoff in affected watersheds.
- Avoid contaminating return water with chemicals or other pollutants.
- Monitor all aspects of the process and correct problems as they occur to avoid or minimize long-term effects. Regularly inspect snowmaking lines and equipment to prevent accidental discharges and erosion due to equipment failure.

Rec-12. Ski Area Facilities

- Locate ski area facilities on stable geology and soils to minimize risk of slope failures.
- Avoid wetlands and riparian areas to the extent practicable when locating ski area facilities.
- Use applicable practices of BMP Fac-2 (Facility Construction and Storm water Control) to provide erosion and storm water controls when constructing and operating ski area facilities.
- Use applicable practices of BMP Road-2 (Road Location and Design), BMP Road-3 (Road Construction and Reconstruction), BMP Road-4 (Road Operations and Maintenance), BMP Road-8 (Snow Storage and Removal), and BMP Road-9 (Parking Sites and Staging Areas) for designing, constructing, maintaining, and operating roads and parking areas at ski area facilities.
- Use applicable practices of BMP Fac-9 (Pipelines, Transmission Facilities, and Rights-of-Way) for managing power and utility lines at the ski area facilities.
- Use applicable practices of BMP Fac-6 (Hazardous Materials), BMP Fac-7 (Vehicle and Equipment Wash Water), and BMP Road-10 (Equipment Refueling and Servicing) for activities related to storage and maintenance of ski area vehicles and equipment.
- Use applicable practices of BMP Fac-3 (Potable Water Supply Systems) for drinking water, BMP Fac-4 (Sanitation Systems) for managing human waste, and BMP Fac-5 (Solid Waste Management) for managing solid waste at ski area facilities.
- Use applicable practices of BMP Fac-10 (Facility Site Reclamation) when discontinuing use at ski area facilities.

Construction Design Features

- Construction involving ground disturbance would occur when ground conditions are dry and snow free.
- Site surveys would include a topographical survey to accurately locate each tower.
- Geotechnical surveys would be completed to evaluate site suitability and stability.
- Geotechnical drilling would be completed when fire danger is low to moderate.

Engineering Design Features

The zip line course, if accepted, would be designed, installed, operated, maintained, and audited in accordance to applicable industry standards, and referenced practices or equivalent industry standards and/or State standards, if they are more restrictive. The following are a listing of considerations and submittal requirements:

- Construction plans, designs, calculations, drawings, and specifications (45 days prior to construction)
- All plans, designs, calculations, drawings and specifications, including revisions be prepared by a qualified engineer, and submitted per professional licensure seal requirements of the State.
- Design certification
- Development testing of materials, design loads, dynamics, possible impact loads, fatigue, etc.
- Profile and foundation drawings, including features such as power lines etc. that may affect the installation
- Initial drawing log
- Ride analysis
- Design and calculations, engineering analysis, performance characteristics, anchoring devices, operator controls, brake/braking systems, personnel rigging equipment, trolleys, pulleys, adverse conditions affecting the design, minimum and maximum loading, operational limits etc.
- Design and calculations for trees, poles, wire rope, other ropes, fencing, guarding, walkways, gates and other passenger control measures
- Installation and commissioning materials, acceptance and performance testing procedures
- Operational and non-destructive testing procedures
- Certificate of construction
- Material testing results, and certifications
- Maintenance manual
- Operations manual, operating instructions, loading/unloading instructions, training, ride restrictions, daily inspections, daily test runs, emergency procedures, minimum operating personnel, communications, passenger training, etc.
- Inspection program, daily inspection criteria, requirements frequency,

- Wire rope inspections, frequency, damage, broken wires, maintenance impact areas, displaced wires/strands, diameter reduction, tensions, tensioning procedures
- Daily preoperational inspections – complete, procedure, qualifications etc.
- Preliminary evacuation and rescue plans/provisions/equipment, first aide, training, ground care, testing
- Operational restrictions, guidelines
- Soil analysis as needed and determined by design engineer etc.
- Personnel safety equipment determined by qualified engineer
- Final documentation and certifications, testing etc.

Vegetation and Soils Design Features

- Proposed areas of disturbance within the project area were surveyed on June 25, 2012. No threatened, endangered, sensitive, or rare plants were found. If any are discovered during project layout or implementation, the appropriate specialist(s) will examine the area and the necessary mitigation action shall be taken.
- Invasive weed control as outlined in the Shoshone National Forest Noxious and Invasive Weed Control EA would take place as needed in the analysis area. Mitigation measures and contract provisions would be included with each action alternative to minimize the spread of existing weeds and the introduction of new ones.
- The area received a “Moderate” risk rating for weeds with this recommendation: “Develop preventative management measures for the proposed project to reduce the risk of introduction or spread of undesirable plants into the area. Monitor the area for at least 3 consecutive years and provide for control of new infestations.”

Applicable Best Management Practices (FSM 2900) for invasive/noxious weed management are summarized:

- Remove all mud, dirt, and plant parts from all equipment before moving into project area. Cleaning must occur off National Forest lands.
- Minimize soil disturbance. Re-vegetate bare soil with appropriate seed mixes. Use weed free seed and erosion control products.

To minimize soil disturbance:

- Integrate weed prevention and management into the project design.
- Conduct an invasive weed evaluation of the project area before implementation. Areas with current noxious weeds shall be treated prior to project implementation. Follow up treatment will be part of the ski area permit.
- Topsoil shall be salvaged at disturbance sites and used for reclamation of the site. Mulching for erosion control purposes will be accomplished with certified weed free products.
- Plant disturbed areas with Idaho fescue, blue bunch wheatgrass, and Sherman big blue grass.
- Install adequate drainage and erosion control where needed.

- Do major ground disturbing activities in a period of low soil moisture to avoid detrimental compaction and rutting damage to access roads.

Wildlife Mitigation and Design Features

- Facilities to be removed at the Blackwater Picnic Area to mitigate for grizzly bear impacts close to the zip line include: picnic tables, outhouse, turnaround, and benches around the pond. This work would be completed prior to initiation of any construction activities associated with the Sleeping Giant zip line.
- Two campsites previously removed from the Newton Creek campground will not be replaced.
- The calculated annual capacity of the Blackwater Picnic Area (4,040 persons per season) and the two sites at Newton Creek campground (1,320 persons per season) would represent the maximum annually allowable ridership for the zip line during the season of operation (cap of 5,360 riders per year).
- The Shoshone National Forest will continue to fill a position for at least the next five years whose major duties will include public contacts for food storage order compliance and education on the North Fork corridor. The forest will also pursue an agreement with the project proponents to jointly fund this position.
- The summer operating plan for the Sleeping Giant facility will include a grizzly bear protection plan to minimize conflicts between bears and humans. The plan will include requirements for briefing of all employees and customers regarding the food storage order and the importance of properly storing attractants, the protected status of grizzly bears, and appropriate safety measures and behavior in grizzly bear habitat; management of garbage and other attractants; and reporting of bear activity or conflicts within the permitted area. The Forest Service will cooperate with the permittee to provide information needed for employee/customer briefings.
- Customers will not be allowed to possess food or attractants on the zip line course to prevent accidental or intentional dispersal of attractants where bears could access them.
- Patrols of the zip line course and parking area will be conducted at least once each day at the end of the operational period for the zip line to ensure garbage and attractants are collected and stored properly.
- Construction activities associated with the zip line would not be allowed from April 1-June 15 to prevent disturbance to bears during the season when habitat in the Sleeping Giant area is most important to bears. This restriction will not apply to activities occurring between the existing lodge and the highway.
- The Food Storage Order in its most current form would apply to all permitted activities.
- The grizzly bear protection clause (O.SH-X2-Grizzly Bear Protection) which is currently a part of the permit to Yellowstone Recreations, LLC for the operation of the Sleeping Giant Ski Area will remain a part of the permit in the event that the permit is amended or re-issued. This clause generally provides for the temporary suspension or revocation of the permit due to conflicts with grizzly

bears, and requires the permit holder to comply with the requirements of the grizzly bear management and protection plan.

Watershed/Hydrology Design Features (see also Appendix C)

- Mitigation measures are implemented in the form of BMPs. The implementation and effectiveness monitoring of the BMPs is “the fundamental basis of the Forest Service water quality management program to protect, restore, or mitigate water quality impacts from activities on National Forest Service lands” (USDA 2012). Best management practices are primarily developed from the National BMPs and the Forest Service Handbook 2509.25, Chapter 10, Watershed Conservation Practices Handbook. These BMPs have been developed in coordination with the Wyoming Department of Environmental Quality and agreed to through a Memorandum of Understanding. Appendix C discloses the selected BMPs for this project. Through the effectiveness monitoring process, if any BMP is identified as inadequate to protect water quality, adaptive management measures will be employed such that water resources are protected.
- The first priority for mitigation would be to limit the use of heavy equipment by season or weather conditions such that ground disturbance and potential sediment delivery to the river would be kept to a minimum. Mitigation for ground disturbance would include revegetation in order to stabilize soils. The appropriate use of other soil stabilization structures until revegetation occurs would also be recommended when slope and soil conditions indicate. As well as these general measures, several conditions from the Watershed Conservation Practices Handbook may be applicable:
 - Keep heavy equipment out of streams, swales, and lakes, except to cross at designated points, build crossings, or do restoration work, or if protected by at least 1 foot of packed snow or 2 inches of frozen soil. Keep heavy equipment out of streams during fish spawning, incubation, and emergence periods (12.1c).
 - Keep heavy equipment out of filter strips except to do restoration work or build armored stream or lake approaches (13.2d).
 - Employ water drafting measures for snowmaking that avoids entrainment of aquatic life.

Recreation Design Features

- To avoid interference with the use of the existing Nordic ski trail, hay bales (certified weed free), temporary fencing, or berms should be used to insure that the public using the tubing hill will not end up passing through the ski trail. Grooming methods as well as berms should delineate the ski trail from the walking path to the tubing hill.

CHAPTER 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

This chapter describes the affected environment of the project area and the potential changes to the environment due to implementation of the proposed action. Direct, indirect, and cumulative effects are disclosed. Effects are quantified where possible, but qualitative discussions are also included.

The following discussion of resources and potential effects associated with each of the alternatives takes advantage of existing information included in the Forest Land and Resource Management Plan; project-specific resource reports and related information; and other sources, as indicated. Where applicable, information is briefly summarized and referenced to minimize duplication.

This EA hereby incorporates, by reference, the project planning record and resource reports contained in the planning record (40 CFR 1502.21). The planning record for this project includes all project-specific information, including resource reports, field investigations, and other analyses used to support the conclusions in this EA. These reports and analyses include: Vegetation, Wildlife, Watershed Resources, Fire and Fuels, Recreation, Socio-Economic Resources, Visuals, Heritage Resources, Engineering, and Climate Change. Together, these reports contain the data, methodologies, analyses, conclusions, maps, references, and technical documentation that the resource specialists relied upon to reach the conclusions in the individual resource sections.

Much of the Shoshone National Forest resource data resides in an electronic database formatted for a geographic information system (GIS). The Forest uses GIS software to assist in the analyses of this data. GIS data are useful for comparing alternatives, but numbers displayed in this analysis are approximate and may differ from actual distances measure on the ground. All quantitative data for trails, towers, and other facilities would be subject to as-built surveys once completed.

3.2 Resources Eliminated from Analysis

Several resource issues that are frequently discussed in environmental assessment documents are not discussed in depth here. This is because there is no resource or use in the categories as described below:

- Wilderness and Roadless Areas: The project does not occur in a wilderness or roadless area and does not impact wilderness or roadless areas in any way.
- Range: There are no grazing allotments that utilize the project area.
- Minerals: There are no mineral resources or mineral interests in the project area.

3.3 Vegetation

3.3.1 Sensitive Plant Species

Affected Environment

There are 25 Region 2 sensitive plant species and/or species of concern documented on the Forest. These plants include roundleaf orchid, lesser panicked sedge, bristly stalked sedge, livid sedge, English sundew, Hall's fescue, Chamisso's cotton grass, slender cotton grass, kotzebue grass of Parnassus, Greenland primrose, Absaroka beard's tongue, Absaroka goldenweed, entire leaf golden weed, tundra buttercup, sageleaf willow, Baratt willow, myrtleleaf willow, shoshonea, North Fork Easter daisy, Fremont's bladderpod, Wyoming tansy mustard, simple bog sedge, sphagnum moss, trianglelobe moonwort, whitebark pine, and lesser bladderwort.

According to the literature review, none are presently documented in the ski area. None were found during the site visit on June 25, 2012.

Environmental Consequences

Effects Summary

There were no sensitive plants found in a survey of the project disturbance areas and thus there would not be significant effects associated with any alternative.

Effects

Alternative 1: No Action.

Direct and Indirect Effects.

Management will continue to avoid disturbance of Region 2 sensitive plants.

Alternatives 2 and 3: Proposed and Modified Proposed Action.

Direct and Indirect Effects.

Under Alternatives 2 and 3, it was concluded R2 sensitive plants were not present on the proposed development area. Because of this fact, Alternatives 2 and 3 "may affect individuals but are not likely to cause a trend to federal listing or loss of viability of sensitive plants."

Monitoring

If an action alternative was selected and sensitive plants not identified in the site visit were discovered, implementation and effectiveness monitoring of BMPs and project design is recommended. Otherwise, no special action is needed because of the absence of sensitive species on the proposed development site.

3.3.2 Weeds and Invasive Species

Affected Environment

This project has a “moderate” weed assessment rating due to the current presence of noxious weeds in the general vicinity of the ski area. Undesirable plant species are located immediately adjacent to or within the project area. The last weed inventory was completed during the summer of 2012. At this time the analysis area contained populations of hounds’ tongue, spotted knapweed, white top, bull thistle, and Canada thistle (SNF-GIS MAP- WEEDS-2011). The project area will need to be monitored during the growing season for new infestations and existing populations will need to be chemically treated. Particular attention needs to be given to existing weed populations. Forest Service Noxious Weed BMP’s will need to be followed. Noxious weeds in the area have dramatically increased since the 1970’s along the North Fork Highway. Invasive plants exist and will continue to expand if not controlled by a proactive weed program.

Environmental Consequences

Effects Summary

Weeds exist on the project site and soil disturbance has the potential to exacerbate weed invasions. All of the above noxious weeds exhibit an excellent potential for rapid spread with disturbance. These invasive species have possible effects to land productivity and biodiversity and displacement of native plant communities.

Existing best management practices and weed management plans, if carried out, monitored, and reviewed periodically can help moderate the risks associated with soil disturbance.

Effects

Alternative 1: No Action.

Direct and Indirect Effects.

Under Alternative 1, no increase in ground disturbance would occur. Current levels of weed treatments would be scheduled, dependent on funding.

Alternatives 2 and 3: Proposed and Modified Proposed Action.

Direct and Indirect Effects.

For Alternatives 2 and 3, all of the above mentioned invasive weed species pose a competitive threat to native plant populations in the analysis area. Native Idaho fescue, blue bunch wheatgrass, mountain big sagebrush, aspen, and riparian communities are particularly vulnerable to being dramatically altered by invasive species. Proposed disturbance increases the risk of the spread of invasive or noxious weeds by soil disturbance. Project design/mitigation measures are designed to control any potential future weed expansion. Weed control programs conducted by the project proponent, Cooperative Weed Management Areas, Park County, and the Forest Service will attempt to control such increases.

Monitoring

If an action alternative were selected, the following implementation and effectiveness monitoring of BMPs and project design is recommended:

Invasive species/weed monitoring. For up to five years after completion of the project, the analysis area shall be monitored or resurveyed for the presence of newly invading exotic species. Treatment of existing noxious weed populations shall be evaluated as to the effectiveness of treatments. The permittee and the Forest shall monitor the spread of weeds and initiate treatment if needed.

3.3.3 Special Areas (Vegetation)

Special Areas or Unique Characteristics.

Areas of proposed disturbance would not adversely affect any unique characteristics of the geographic area or these special areas: riparian ecosystems, wetlands, and floodplains. The proposed areas of disturbance do not contain habitat for R2 sensitive plant species.

Potential Research Natural Areas (RNA) or Special Interest Areas (SIA).

No RNA's or SIA's are located adjacent to the ski area. Two proposed RNA's are located east of the Ski Hill near Grizzly Creek and Blackwater Creek.

3.4 Wildlife

Affected Environment

Threatened and Endangered Species

Grizzly Bear

The assessment area is within occupied grizzly bear habitat (Schwartz et al. 2006). Bears in this area are part of the Yellowstone grizzly bear population. The Yellowstone grizzly bear population was estimated at approximately 602 bears in 2010, and the population growth rate from 1983-2010 was estimated at 3-5% (Haroldson 2011, page 12). Grizzly bears in the Yellowstone Ecosystem were removed from the threatened species list in 2007. However, a court decision in 2009 resulted in the Yellowstone grizzly bear population being placed back on the threatened species list. Additionally, the grizzly bear is listed as a Management Indicator Species (MIS) under the Forest Plan.

The assessment area is within the Grizzly Bear Recovery Zone, also known as the Primary Conservation Area (PCA). The recovery zone was divided into Bear Management Units (BMU's) to be used for habitat evaluation and population monitoring (U.S. Fish and Wildlife Service 1993, page 17). Bear Management Units were further subdivided into Bear Management Subunits (BMS's) to allow better resolution of habitat measurement (Interagency Conservation Strategy Team 2007, page 17). The assessment area lies within the Shoshone #4 BMS which encompasses about 189 square miles in the upper North Fork of the Shoshone River drainage. It is within the North Fork Shoshone River corridor. The four subunits which comprise the Shoshone BMU all converge along the river corridor. Due to the proximity of the ski area to the rest of the North Fork corridor and the biological connection of the entire upper corridor, the area considered for the analysis was the Shoshone BMU. This facilitates analysis of that portion of the North Fork corridor within the PCA.

During the time when grizzly bears were delisted in the Yellowstone area, the Forest Plan Amendment for Grizzly Bear Habitat Conservation for the Greater Yellowstone Area National Forests provided management direction. When the bear was relisted in 2009, the 2006 Forest Plan Amendment was voided. However, the 2006 Forest Plan Amendment was based on The Final Conservation Strategy for the Grizzly Bear in the Yellowstone Ecosystem, which provided the most current information regarding grizzly bear habitat management. Habitat management recommendations from the Conservation Strategy are the most current recommendations available; were derived from the best available science; and were considered in this analysis. Standards for management of secure habitat and developed sites from the Conservation Strategy were potentially relevant for this project and are discussed below.

The current Shoshone Forest Plan was published in 1986 and contains little relevant management direction for grizzly bear habitat specific to this project. It does specify that management for grizzly bears will be as directed in the Interagency Grizzly Bear Guidelines (Interagency Grizzly Bear Committee 1986). The only relevant portion of the Grizzly Bear Guidelines involves management of garbage and other attractants at recreation sites, which is discussed below.

Motorized Access and Secure Habitat

Grizzly bears are known to be sensitive to the effects of human access, especially motorized uses. A number of studies addressed the effects of roads on grizzly bears and, to various degrees, universally showed negative impacts (Claar et al. 1999, pages 7.24-7.25). The most common theme seems to be that motorized routes generally displace bears, and they use the habitat adjacent to motorized routes less than areas farther from these routes. Results vary somewhat with habitat quality, cover availability, traffic volume, season and some other variables. In addition to displacement from habitat by motorized routes, Mace et al (1996) found a relationship between mortality of grizzlies and human activities, with 8 human-caused mortalities of marked grizzly bears in their study area in northwest Montana from 1988-1994. These deaths were directly influenced by road access through illegal killing and through management removal of bears conditioned to human foods in developed areas. Schwartz et al. (2010a) found that roads and related attributes were the most important predictors of grizzly bear survival in the Yellowstone ecosystem.

For these reasons, management of motorized access has long been an emphasis for grizzly bear recovery. The primary focus of access management currently involves providing adequate secure habitat. Secure habitat is defined as any area >500 meters from an open or restricted (i.e. gated or administrative) motorized access route during the non-denning season and >10 acres in size (Interagency Conservation Strategy Team 2007, page 146). A major goal of the Conservation Strategy was to maintain levels of secure habitat within each subunit that existed in 1998 when bears met demographic recovery criteria (Interagency Conservation Strategy Team 2007, page 39). The premise was that the amount of secure habitat in 1998 was sufficient to achieve recovery of the bear population. The purpose of managing for secure habitat is to provide adequate area for bears to meet their biological requirements with low levels of disturbance and interaction with humans, especially for adult females (Interagency Conservation Strategy Team 2007, page 43). Bears that avoid human disturbance in developed landscapes

would have ample habitat available provided there is adequate secure habitat present in the area.

Secure habitat over the entire Shoshone BMU has increased slightly since 1998 due to closure of roads in the Kitty Creek area within the Shoshone #3 BMS (Table 3.1). This BMU has a large amount of secure habitat well in excess of the mean secure habitat value for the entire Primary Conservation Area. Non-secure habitat is concentrated along the North Fork highway and the several short spur roads off of it. The Shoshone #4 BMS is currently 94.9% secure habitat, which is the same as the 1998 baseline value. There are currently two service roads accessing the Sleeping Giant ski area that are classified as open roads in the motorized access database (Figure 3.1). These roads are used for maintenance of facilities during the non-operational season. The ski area is therefore outside of secure habitat.

Outside of secure habitat, the Conservation Strategy (Interagency Conservation Strategy Team 2007, page 44) called for monitoring open and total motorized access route density (OMARD and TMARD). These parameters affect how bears use more developed areas outside of secure habitat. They are tracked and reported as the percentage of the subunit with OMARD >1 mi/mi² and TMARD >2 mi/mi². OMARD and TMARD values are both low for this BMS due to the very limited road system (Table 3.1). They are well below the mean values for the PCA.

Table 3.1. Motorized access values for the Shoshone BMU compared to average values for the Primary Conservation Area

<u>Motorized Access Parameter</u>	<u>Shoshone #1 BMS</u>	<u>Shoshone #2 BMS</u>	<u>Shoshone #3 BMS</u>	<u>Shoshone #4 BMS</u>	<u>PCA Mean Value⁺</u>
1998 Baseline Secure Habitat	98.5%	98.8%	97.0%	94.9%	86.0%
2010 Secure Habitat	98.5%	98.8%	97.7%	94.9%	86.2%
2010 OMARD >1 mi/mi ² March 1-July 15	1.5%	1.3%	3.9%	4.5	10.4%
2010 OMARD >1 mi/mi ² July 15-November 30	1.5%	1.3%	2.9%	5.3%	10.7%
2010 TMARD >2 mi/mi ²	1.1%	0.7%	1.6%	2.9%	5.3%

+Values were from Greater Yellowstone Area Grizzly Bear Habitat Modeling Team 2011, page 82

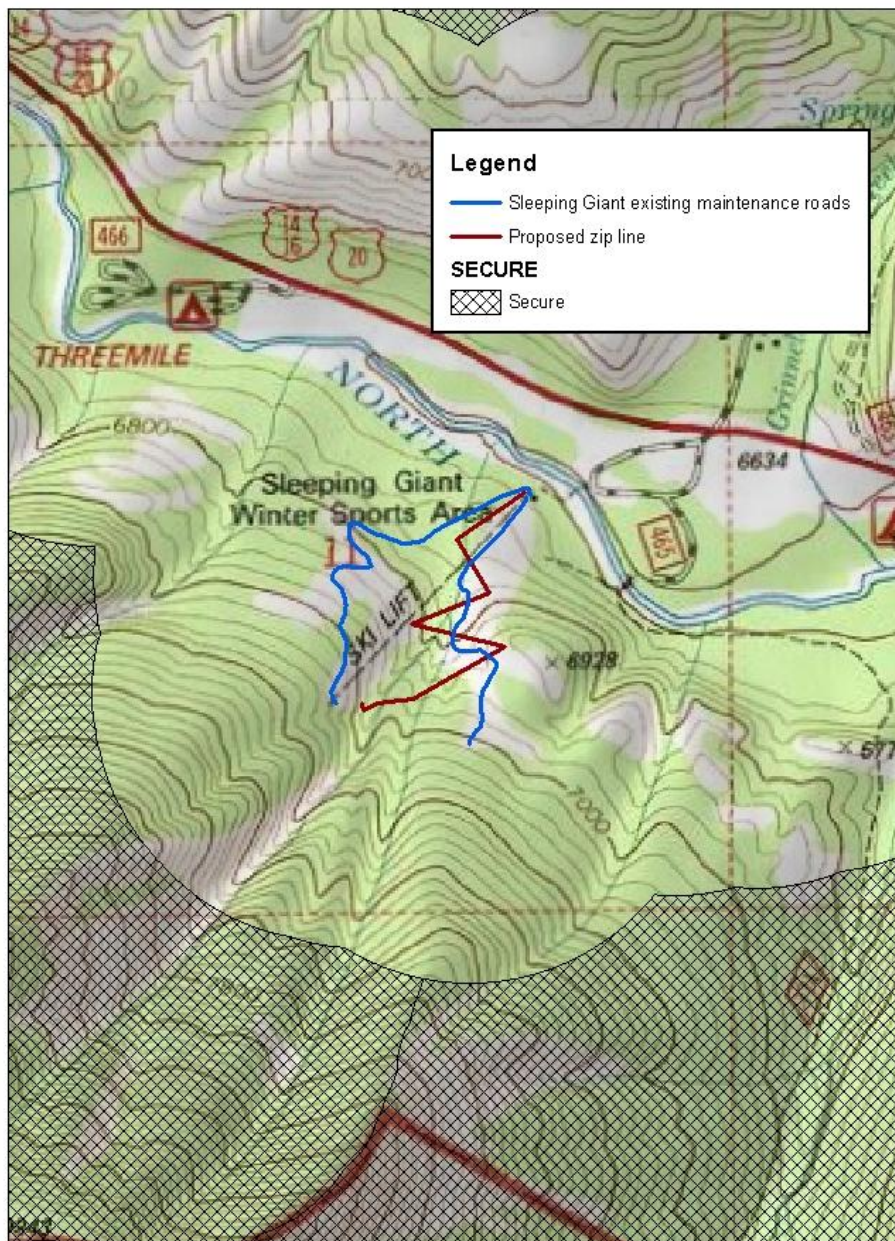


Figure 3.1. Grizzly bear secure habitat in the Sleeping Giant project area under the existing condition and with the proposed zip line

Developed Sites in Grizzly Bear Habitat

Human developments are known to affect grizzly bear use of habitat and increase mortality risk. Mattson et al. (1987) reported that grizzly bear use was lower in areas near human developments, bear foraging behavior was disrupted, dominant bears displaced subordinate bears into areas closer to developments, and adult females and subadult males residing closer to developments were more likely to be involved in management actions. Mattson and Knight (1991) reported developments were also a significant factor in grizzly bear mortality risk in the Yellowstone area.

Human linked foods can be left available to bears at developed sites. Bears that obtain non-natural foods may become more aggressive in their attempts to access them in the future, causing property damage and posing an increased risk for human safety. Bears that repeatedly attempt to gain access to anthropogenic foods may become human habituated from repeated interactions with people while trying to obtain these foods. Food-conditioned or human habituated bears often have to be removed from the population by managers. Bears can also become tolerant of human activity around developed sites, a condition known as habituation. Habituated bears are more likely to become food-conditioned and removed from the population (Mattson et al. 1992). Habituated bears have a higher risk of being struck by vehicles as they are often found in proximity to roads (U.S. Fish and Wildlife Service 1995), and are more vulnerable to being illegally killed.

The North Fork corridor has a considerable history of grizzly bear-human conflicts due to the high amount of bear use in close proximity to the numerous developed sites and other human activity. During 1982-1988, 179 grizzly bear-human conflicts (25.6 conflicts/year) were reported in front country developed areas in the western portion of the North Fork corridor (U.S. Fish and Wildlife Service 1995), which roughly corresponds to the area within the Shoshone BMU. This was reported to be approximately 51% of the total reported conflicts outside of Yellowstone National Park.

The Forest Service responded to the alarming number of conflicts and associated grizzly bear mortalities in the North Fork corridor by changing management practices. Food storage regulations went into effect during the 1980's. In the 1990's a special order was signed prohibiting dispersed camping along the North Fork corridor, enforcement and education regarding the Food Storage Order was increased, and changes in developed sites were made to reduce human activity in the western-most portion of the North Fork corridor where bear use was highest.

Current conflict levels in this area have decreased significantly from those observed in the 1980's and 1990's. This is reflective of an ecosystem wide shift in attractant-related and property damage conflicts towards private lands (Guenther et al. 2011, page 42) as bears have increased in distribution and agencies have improved sanitation standards and enforcement on public lands in grizzly bear habitat. For example, an analysis of conflict concentration areas from 2008-2010 showed that the upper North Fork was outside of the top conflict areas in the ecosystem (Guenther et al. 2011, page 44), despite the fact that it had 51% of the total reported conflicts outside of Yellowstone National Park in the 1980's (U.S. Fish and Wildlife Service 1995).

From 2000-2011, there were 74 grizzly bear-human conflicts recorded in the front country along the North Fork corridor within the Shoshone BMU (6.2 conflicts/year). Fifty-seven of these were directly associated with developed sites (Wyoming Game and Fish Department data). Some of these conflicts were related to non-compliance with the Food Storage Order. Others were due to bears causing property damage by breaking into structures or other facilities in search of food. Often these bears were already food-conditioned due to conflicts at other sites.

There were three grizzly bear mortalities in the Shoshone BMU from 2002-2004 due to conflicts at developed sites (Wyoming Game and Fish Department data). These were

management removals occurring at Pahaska Lodge, Shoshone Lodge, and the Eagle Creek Trailhead. Additional conflicts or mortalities may have occurred elsewhere as a result of food-conditioned behavior or habituation originally learned from interactions at developed sites within the analysis area, but these are impossible to track. However, no management captures or removals of grizzly bears have been recorded since 2004 in the analysis area.

Conflicts related to human injuries and self-defense also have some potential to occur around developed sites. This is true whenever people and bears occupy the same areas. These conflicts often result in bear mortalities as well. However, the majority of these conflicts occur outside of developed sites in backcountry areas associated with big game hunting (Gunther et al. 2004). There are no records of self-defense related bear mortalities associated with developed sites in the analysis area. However, measures may be implemented at developed sites to provide for human safety.

The Conservation Strategy contains a standard for developed sites stating that,

“inside the PCA, maintain the number and capacity of developed sites at or below 1998 levels, with the following exceptions: any proposed increase, expansion, or change of use of developed sites from the 1998 baseline in the PCA will be analyzed and potential detrimental and positive impacts on grizzly bears will be documented through biological evaluation or assessment.”

The application rules further state that,

“mitigation of detrimental impacts will occur within the affected subunit and be equivalent to the type and extent of impact. Mitigation measures will be in place before implementation of the project or included as an integral part of the completion of the project. New sites must be mitigated within that subunit to offset any increases in human capacity, habitat loss, and increased access to surrounding habitats. Consolidation and/or elimination of dispersed campsites is adequate mitigation for increases in human capacity at developed campgrounds if the new site capacity is equivalent to the dispersed camping eliminated. Land managers may improve the condition of developed sites for bears or reduce the number of sites. The improvements may then be used at a future date to mitigate equivalent impacts of proposed site development increase, expansion, or change of use for that administrative unit within that subunit.” (Interagency Conservation Strategy Team 2007, page 42)

Developed sites were defined as,

“sites on public land developed or improved for human use or resource development such as campgrounds, trailheads, lodges, administrative sites, service stations, summer homes, restaurants, visitor centers, and permitted resource development sites...”

The intent of the developed site standard was to keep the effects of developed sites on grizzly bears as they existed in 1998 when recovery criteria were met (Interagency Conservation Strategy Team 2007, page 45).

Significant changes in developed sites within the Shoshone BMU occurred just prior to 1998 in association with reconstruction of the North Fork Highway. Partially as

mitigation for impacts to grizzly bears and their habitat from the highway reconstruction, the 24-unit Pahaska Campground was closed, the Pahaska Trailhead was relocated, and the Grinnell Trailhead was closed and consolidated with the Pahaska Trailhead.

The 1998 developed site baseline had a total of 38 developed sites for the Shoshone BMU. Except for one, these developed sites are all concentrated along the North Fork Highway corridor. Changes in developed sites have also occurred since 1998. The Kitty Creek Trailhead was within the Shoshone #3 BMS approximately 5 miles from Sleeping Giant. The trailhead, along with 1.5 miles of road were closed in 1999 and converted to a non-motorized trail. This led to an increase in grizzly bear secure habitat, reduced potential for conflicts related to attractants, and reduced access to adjacent backcountry areas (there is currently very little parking for trail access in Kitty Creek). The closing of the Kitty Creek Trailhead was completed as part of the mitigation for the North Fork Highway reconstruction, and was therefore not available for further mitigation of developed sites (Yellowstone Grizzly Coordinating Committee Habitat Modeling Team 2008). The ten-unit Sleeping Giant Campground was converted to a picnic area in 2003 (Yellowstone Grizzly Coordinating Committee Habitat Modeling Team 2008, page 87). There has been no expansion in capacity or type of use at other developed sites within the Shoshone BMU.

The Sleeping Giant Ski Area was part of the 1998 baseline for developed sites within the Shoshone #4 BMS. Human activity levels are high from December-March when the ski area is operational. During the period from April-November when the ski area is not operational, human activity is much lower and involves motorized access on the existing roads accessing the ski lifts for maintenance activities approximately 2-4 times/week (Jonathon Sheets, personal communication, 05/10/2012).

Seasonal grizzly bear use and daily activity patterns

To predict the effects of the proposed action, an understanding of how bears use the habitat in and adjacent to the ski area is important, including seasonal variation in habitat use. To evaluate seasonal habitat use of the Sleeping Giant area, grizzly bear location data from the Interagency Grizzly Bear Study Team was used. Data sources included GPS and VHF collared bear locations, observations of females with cubs of the year, grizzly bear-human conflicts, management captures, and grizzly bear mortalities. Locations from 2000 to the present that were <3 km from the ski area and <7,500' elevation were used. The 44 locations fitting these criteria were then tallied by season (<June 15, June 15-September 15, and >September 15). The data showed that bears use the area most heavily in the spring/early summer, prior to June 15 (55%). Fall was the next highest use period, with 30% of the locations. Summer and early fall (June 15-September 15) was the lowest use period, with 16% of the locations.

This seasonal use pattern has previously been observed. The Biological Opinion on the Cody to Yellowstone National Park Highway (North Fork Shoshone River Corridor) reported that,

“although substantial bear use of the project area does occur year-round, it appears that the highest use by bears occurs during spring when food sources are available in the form of carrion, grasses, and forbs.” (U.S. Fish and Wildlife Service 1995)

The Sleeping Giant ski area is located towards the upper end of the North Fork corridor, which is a narrow valley that increases sharply in elevation beyond the river bottom. Snow melt and green up of vegetation occurs much earlier here than in the surrounding higher elevations. The area therefore provides vegetation food sources early in the year when surrounding areas are snow bound. Additionally, the valley is winter and spring range for large numbers of elk, deer, bighorn sheep, and moose. Winter killed big game animals are a significant food source for bears when they emerge from their dens in spring (Mattson et al. 1991).

Newborn calves and fawns are another important food source for grizzly bears in early summer (Gunther and Renkin 1990). Both are readily available in the North Fork corridor during spring/early summer. By mid-June, snow melt has typically advanced to the point that adjacent higher elevation habitat is available to bears. Plant phenology is favorable for foraging late into the summer at higher elevations, and many bears are using moth aggregation sites in alpine areas far above the North Fork corridor during this period.

Although many bears disperse to higher elevations at this time, considerable bear use within the upper North Fork corridor for foraging and travelling occurs throughout the summer. Bear use of the upper valley increases again in fall as food sources at higher elevations decrease in availability and caloric demands for bears increases prior to denning. Bear use of the North Fork corridor can be high during late summer and fall in years when food sources such as whitebark pine or moths are poor, or when berry production is good along riparian corridors in the upper North Fork.

Daily activity patterns of bears are also an important consideration for understanding the effects of the proposed action. Schwartz et al. (2010b) evaluated activity patterns of grizzly and black bears in the southern part of the Yellowstone ecosystem from 2004-2006. From June-September, they observed a pronounced bimodal pattern with peak grizzly bear activity near sunrise and just prior to sunset. Grizzly bears of both sexes shifted their activity to become more night active when they were <1 km of a developed site. Bears <1 km from a development were typically inactive for 8 hours during the daytime, while those >5 km were more likely to be foraging or travelling during the same time. Bears 1-2 km from developments displayed similar shifts in activity patterns as those <1 km, but the shifts were less pronounced.

Canada Lynx

On March 24, 2000 the U.S. Fish and Wildlife Service (USFWS) published its determination on the status for the contiguous U.S. distinct population segment of the Canada lynx (*Lynx canadensis*). The lynx has since been listed as a “threatened” species in the contiguous United States. Generally, the relatively dry climate, low productivity of volcanic soils, and naturally patchy conifer cover in the east side of the Absaroka Range results in poor snowshoe hare and lynx habitat quality. Nonetheless, lynx may be at least occasionally present in the area. Snow-tracking surveys conducted in the Sunlight area during 1998 and 2009 failed to detect lynx presence (Laurion and Oakleaf 1998; Holmes and Berg 2009). A survey grid was sampled in the Sunlight area approximately 15 miles northeast of Sleeping Giant Ski Area during 1999, 2000, and 2001 as part of the National Lynx Survey. During the 1999 survey a lynx was detected through DNA analysis of a hair sample collected at a sampling station in Sulphur Creek (USDA Forest Service,

unpublished data). No lynx were detected when the same areas were sampled in 2000 and 2001. Searches of Wyoming Game and Fish Department and Forest Service observation data for lynx showed no known occurrences of lynx in the project vicinity.

In January 2000 the Canada Lynx Conservation Assessment and Strategy (LCAS) was published, which established early conservation measures for lynx habitat. It recommended that Lynx Analysis Units (LAU's) which contain all components of lynx habitat and approximate the size of an area used by an individual lynx be delineated (Ruediger et al. 2000, page 7-4). LUA's were delineated across the Shoshone National Forest. The project is within the Upper North Fork LAU# 6. The proposed developments for the Sleeping Giant Ski Area are located outside of mapped lynx habitat, although lynx habitat occurs at higher elevations in the vicinity. Lynx may occasionally travel through the area, but it does not provide foraging or denning habitat.

Current guidance for management of lynx habitat is provided by the recent Northern Rockies Lynx Forest Plan Amendment. This document contains standards and guidelines specific to Forest Service land management activities. The guidelines that could potentially apply to this project are those for Human Use Projects. These guidelines apply to human use projects in lynx habitat in lynx analysis units in occupied habitat (USDA Forest Service 2007, Attachment 1, page 6). Because there is no lynx habitat in the area affected by the proposal, the Human Use guidelines do not apply to this project.

Lynx Critical Habitat

The U.S. Fish and Wildlife Service released a final rule identifying revised critical habitat for the lynx on February 25, 2009 (U.S. Fish and Wildlife Service 2009, pages 8616-8702). The Sleeping Giant Ski Area is just inside the critical habitat boundary. It is comprised of matrix habitat, or

“habitat types that do not support snowshoe hares that occurs between patches of boreal forest in close juxtaposition such that lynx are likely to travel through while accessing patches of boreal forest within a home range.” (U.S. Fish and Wildlife Service 2009, page 8661)

Gray Wolf

The gray wolf historically occupied the Shoshone National Forest and this area is part of the Gray Wolf Recovery Zone. Wolves were reintroduced into the Yellowstone area in 1995. As of the end of 2011, there were approximately 500 wolves in the Greater Yellowstone Area (U.S. Fish and Wildlife Service et al. 2012, page 2). Gray wolves are currently protected under the Endangered Species Act (ESA) in Wyoming although wolves outside of National Parks and National Wildlife Refuge System lands are designated a "non-essential, experimental population" under Section 10 of the ESA. Wolves within the experimental population geographic area (including the Shoshone National Forest) are treated for management purposes as though they are proposed for listing.

The project area was within the Pahaska pack's territory in 2011 (Jimenez et al. 2012, page WY-4). This pack was estimated at 11 wolves in 2012. Wolves regularly use the area for traveling and hunting but have not denned near the area.

Wildlife Sensitive Species

All designated sensitive species for Region 2 that could occur on or near the Shoshone National Forest (SNF) were considered in this analysis (Table 3.2).

Table 3.2. Sensitive wildlife and fish species known or suspected to occur on the Shoshone National Forest.

<u>Species</u>	<u>Species Occurrence on Forest</u>	<u>General Habitat</u>	<u>Suitable Habitat Present in Project Area</u>	<u>Species Present in Project Area</u>	<u>Method of Determining Species Occurrence in Project Area</u>
Fringed myotis (<i>Myotis thysanodes</i>)	Yes	Dry habitats where open grasslands and shrublands are interspersed with low-mid-elevation mature xeric forests creating ample edges	No	No	Habitat relationship
Spotted bat (<i>Euderma maculatum</i>)	Not known to occur	Canyons, shear rock cliffs, with nearby permanent water	No	No	Habitat relationship
Townsend's big-eared bat (<i>Corynorhinus townsendii pallescens</i>)	Yes	Caves, forested streamsides	No	No	Habitat relationship
White-tailed prairie dog (<i>Cynomys leucurus</i>)	No	Dry sites of sagebrush and grassland in gentle to flat terrain	No	No	Habitat relationship
Water vole (<i>Microtus richardsoni</i>)	Yes	Subalpine and alpine riparian areas with narrow channel, gentle streams and stream banks with deep, well-developed soils	No	No	Habitat relationship
River otter (<i>Lontra canadensis</i>)	Yes	Rivers, lakes, large streams	Yes	Yes	Habitat relationship
American marten (<i>Martes americana</i>)	Yes MIS*	Dense coniferous forest	Yes	Yes	Habitat relationship;
North American wolverine (<i>Gulo gulo luscus</i>)	Yes	Subalpine coniferous forest, cirque bowls and alpine areas.	Yes	Possible	Habitat relationship
Rocky Mountain Bighorn Sheep (<i>Ovis canadensis canadensis</i>)	Yes	Alpine and cliff habitat, low elevation sagebrush/grasslands	Yes	Yes	Habitat relationship; WGFD data

<u>Species</u>	<u>Species Occurrence on Forest</u>	<u>General Habitat</u>	<u>Suitable Habitat Present in Project Area</u>	<u>Species Present in Project Area</u>	<u>Method of Determining Species Occurrence in Project Area</u>
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Yes	Large, fish-bearing lakes and rivers and adjacent areas.	No nesting habitat or winter roosts present.	Possible occasional presence	Habitat relationship
Trumpeter swan (<i>Cygnus buccinator</i>)	Yes	Shallow lakes and large ponds	No	No	Habitat relationship; Field survey
Harlequin duck (<i>Histrionicus histrionicus</i>)	Yes	Swift forest rivers and streams	Yes	Possible	Habitat relationship
Northern goshawk (<i>Accipiter gentilis atricapillus</i>)	Yes MIS*	Mature montane coniferous and mixed forests	Yes	Possible occasional presence	Habitat relationship
Ferruginous hawk (<i>Buteo regalis</i>)	Yes	Open prairie	No	No	Habitat relationship
American peregrine falcon (<i>Falco peregrinus anatum</i>)	Yes	Cliffs	No nesting habitat	No	Habitat relationship; WYNDD data
Northern harrier (<i>Circus cyaneus</i>)	Yes	Marshes, meadows, grasslands, and cultivated fields	No	No	Habitat relationship
Mountain plover (<i>Charadrius montanus</i>)	No	High plains short-grass prairie and desert	No	No	Habitat relationship
Long-billed curlew (<i>Numenius americanus</i>)	No	Grasslands	No	No	Habitat relationship
Black tern (<i>Chlidonias niger</i>)	No	Marsh	No	No	Habitat relationship
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	No	Cottonwood riparian	No	No	Habitat relationship
Western burrowing owl (<i>Athene cunicularia</i>)	No	Open, dry treeless areas on plains, prairies, and deserts	No	Unlikely	Habitat relationship
Boreal owl (<i>Aegolius funereus</i>)	Yes	Subalpine spruce/fir	Yes	Possible	Habitat relationship
Short-eared owl (<i>Asio flammeus</i>)	Not known to occur	Basin-prairie shrublands, grasslands, marshes	No	No	Habitat relationship

<u>Species</u>	<u>Species Occurrence on Forest</u>	<u>General Habitat</u>	<u>Suitable Habitat Present in Project Area</u>	<u>Species Present in Project Area</u>	<u>Method of Determining Species Occurrence in Project Area</u>
Lewis' woodpecker (<i>Melanerpes lewis</i>)	No	Open canopy ponderosa pine forests	No	No	Habitat relationship, WYNDD data
Black-backed woodpecker (<i>Picoides arcticus</i>)	Yes	Spruce/fir forests	Yes	Possible	Habitat relationship
Three-toed woodpecker (<i>Picoides tridactylus</i>)	Yes	Spruce/fir and lodgepole pine forests	Yes	Possible	Habitat relationship
Olive-sided flycatcher (<i>Contopus cooperi</i>)	Yes	Coniferous forests	Yes	Possible	Habitat relationship
Loggerhead shrike (<i>Lanius ludovicianus</i>)	No	Open sagebrush, grasslands, deserts, pastures and prairies	No	No	Habitat relationship
Brewer's sparrow (<i>Spizella breweri</i>)	Yes MIS*	Mountain-foothills and basin-prairie sagebrush	No	No	Habitat relationship
Sage grouse (<i>Centrocercus urophasianus</i>)	Yes	Sagebrush/grasslands	No	No	Habitat relationship,
Grasshopper sparrow (<i>Ammodramus savannarum</i>)	Not known to occur	Great plains grasslands; basin-prairie shrublands	No	No	Habitat relationship
Boreal western toad (<i>Bufo boreas boreas</i>)	Yes	Forested wetlands	No	No	Habitat relationship
Columbia spotted frog (<i>Rana luteiventris</i>)	Yes	Grassy / sedgy edges of streams, lakes, ponds, springs, and marshes	Marginal habitat present	Possible	Habitat relationship
Northern leopard frog (<i>Rana pipiens</i>)	Yes	Aquatic habitats	Marginal habitat present	Possible	Habitat relationship
Hudsonian emerald (<i>Somatochlora hudsonica</i>)	Not known to occur	Boggy ponds	No	No	Habitat relationship

Management Indicator Species

Management indicator species (MIS) are wildlife species that help indicate habitat suitability for other species with similar habitat needs. MIS are used as planning tools to guide and monitor wildlife diversity on National Forest lands. During the forest planning process, 17 wildlife species, in addition to game trout, were selected to be management indicators (see Table 3.3). The needs of all MIS whose habitat is present and that occur

in the project area and that may be affected by the proposed action were considered in this analysis relative to potential effects, Forest Plan direction, and monitoring. The effects of the proposed action on the amount and quality of habitat within the project area were evaluated.

Table 3.3. Management Indicator Species for the Shoshone National Forest.

<u>Species</u>	<u>Species status and why species was selected for analysis</u> (FP= Forest Plan)	<u>Species or habitat exists in project area</u>
Elk	FP featured species Represents early succession coniferous forest	Yes/yes
Mule deer	FP featured species Represents early succession coniferous forest and sagebrush)	Yes/yes
Bighorn sheep	FP featured species Represents alpine areas and unique (cliff) habitat	Yes/yes
Moose	Forest Service sensitive species FP featured species Represents limited riparian habitat	Yes/yes
Mountain goat	FP featured species Represents limited unique (cliff) habitat	No/No
Bald eagle	FP recovery species Forest Service sensitive species	No nesting habitat or winter roosts present.
Peregrine falcon	FP recovery species Forest Service sensitive species	Yes/yes
Black-footed ferret	FP recovery species Listed under ESA as endangered Extirpated from the Forest	No/no
Grizzly bear	FP recovery species Forest Service sensitive species	Yes/yes
Marten	FP ecological indicator for late succession conifer forest Forest Service sensitive species	Yes/yes

<u>Species</u>	<u>Species status and why species was selected for analysis</u> (FP= Forest Plan)	<u>Species or habitat exists in project area</u>
Northern goshawk	FP ecological indicator for late succession conifer forest Forest Service sensitive species FP ecological indicator for	Yes/yes
Brewer's sparrow	sagebrush communities Forest Service sensitive species FP ecological indicator for late	No/no
Hairy wood-pecker	successional aspen and snags FP ecological indicator for riparian	No/no
Beaver	FP ecological indicator for multi-storied aspen	No/no
Ruffed grouse	FP ecological indicator for forested habitat	Yes/yes
Blue grouse		

Environmental Consequences

Effects Summary

The primary wildlife species affected would be the grizzly bear. All alternatives would be in compliance with the Conservation Strategy for Grizzly Bears in the Yellowstone Ecosystem. There would be no effects or discountable effects to all sensitive or management indicator species.

Effects

Grizzly Bear

Alternative 1: No Action.

Direct and Indirect Effects.

Bears would continue to use the habitat around the existing ski area as they have. The Sleeping Giant ski area is <1 km from a heavily traveled highway accessing the east entrance to Yellowstone National Park with numerous developed sites concentrated along the road corridor. Many bears using this area have already likely adapted their habitat use in response to human activities by becoming more night active. Bears that are more sensitive to human activity probably already avoid the existing developed areas and associated human activity along the highway corridor. Additionally, some bears have adapted to human activity in this area through habituation. During most years there are

individual bears present that are highly visible during the daytime, and often observed in proximity to the highway and developments within the North Fork corridor. These bears are at greater risk of mortality from developing food-conditioned behavior or being struck by vehicles.

With no change in the capacity or types of use at developed sites in the analysis area, bear-human conflicts would continue to occur in the analysis area at rates similar to what has been observed over the past decade. Mortality of bears due to food-conditioned behavior is possible but would be infrequent given the history over the past 10 years.

Alternatives 2 and 3: Proposed Action.

Direct and Indirect Effects

Effects of operation

The Sleeping Giant area and adjacent portions of the North Fork corridor are most important to bears in spring and again in fall, when the zip line would not be operational. The proposed action would not affect grizzly bear habitat use during these times. However, the area still receives substantial bear use during summer when the zip line would be operational. The proposed action would increase human activity considerably in the vicinity of the ski area during the summer months, and changes in the way bears use habitat in and adjacent to the Sleeping Giant ski area would occur.

Some bears may simply avoid the habitat adjacent to the Sleeping Giant ski area during the season of operation for the zip line. However, most bears using the North Fork corridor during summer have probably developed some tolerance for human activity because the area is already non-secure habitat with a busy highway, numerous developed sites, and high levels of human activity.

The findings of Schwartz et al. (2010b) indicate that most bears will continue to use the area (which is <1 km from the highway), but will react to human activity at the ski area by becoming less active during the day and more active at night. These bears would travel through and forage in the area during nighttime hours. During the daytime, these bears would react to the zipline by being inactive, foraging elsewhere, or moving around the facility (rather than through it).

Considering daily maintenance checks before and after the operational hours, human activity on the slope would occur roughly from 0800-1900 hours. This would provide some opportunity for bears to use the area at sunrise and sunset (when bear activity levels are usually high) relatively free of human disturbance. The zip line would cause most bears to travel through the area differently, but would not represent a hard barrier to movement. Overall, bears would spend less time foraging in the area during the season of operation, but use may still occur at those times of day when humans are inactive.

Additionally, it is likely that habituated bears will occasionally be actively foraging and travelling on the ski area during the daytime when it is operational. The activity patterns of habituated bears would not change substantially. However, the added development at the ski area would entail more exposure to human activity, and increase the potential for habituation somewhat. Since habituated bears are more likely to become food-conditioned and subject to management removal, or be struck by vehicles, the potential for bear mortality would increase somewhat as a result.

The new permitted activities and facilities would also entail increased risk of conflicts between grizzly bears and humans. The Food Storage Order for the Shoshone National Forest would apply to all permitted activities and is already required under the existing permit for Sleeping Giant Ski Area. This order requires all food, garbage, and other attractants to be stored so they are unavailable to bears, and has been very effective at reducing conflicts between bears and humans and subsequent grizzly bear mortality related to anthropogenic foods. Only approved bear resistant garbage containers would be allowed for storing garbage. Forest Service personnel would be responsible for conducting compliance checks to ensure Food Storage Order requirements were being followed.

Since 2009, the Forest Service has conducted approximately 10-12 inspections each year. Compliance with permit terms and conditions has been good (Anita Harper, USFS permit administrator, personal communication, 4/ 17, 2012). Based on this history, it is expected that compliance with Food Storage Order requirements will be good.

Occasional conflicts related to attractants and property damage at Sleeping Giant are still likely to occur due to the regular bear use of the area. This is supported by the conflict history, which shows that conflicts have occurred at most of the developed sites within the analysis area despite implementation of the Food Storage Order. There is increased potential for mortality of grizzly bears through management removal due to food conditioned behavior as a result.

However, increased Forest Service staffing in the North Fork corridor has significantly helped reduce conflicts and subsequent management removals related to Food Storage Order compliance issues over the past ten years. Since 2006 the Shoshone National Forest has hired a person for the summer season whose primary duty is to patrol the North Fork corridor and make visitor contacts related to grizzly bears and food storage. This position supplements existing recreation and law enforcement staff and helps manage food storage compliance and education. To help mitigate the increased potential for conflicts and management removals associated with Food Storage Order issues, the Shoshone National Forest will commit to continue funding this position for at least five years beyond the construction of the zip line. The Forest will also pursue an agreement with the project proponent to help fund this position for at least that period of time. This commitment would be important for continuing to effectively implement Food Storage Order requirements and minimize bear-human conflicts in the North Fork.

Effects of construction

The Sleeping Giant area and adjacent portions of the North Fork corridor are most important to bears in spring and again in fall. To prevent disturbance and displacement of bears during the critical spring period, construction activities associated with the zip line would not be allowed on the slope above the lodge area from April 1-June 15. The effects of zip line construction would be similar to those discussed for operation of the zip line, except they would likely have a higher intensity and shorter duration. Construction would involve heavy equipment such as excavators on the slope, with greater potential for disturbance. However, this would be of relatively short duration as construction is expected to be completed in two months.

Consistency with management direction

Potential changes in motorized access from the proposed action were evaluated by running the motorized access model. The zip line was treated as a new open motorized access route for this purpose. There was no effect to secure habitat from the zip line, because the zip line would be located between two existing service roads in an area that currently does not provide secure habitat (Figure 3.1). There was also no measureable change in OMARD >1 mi/mi² or TMARD >2 mi/mi² from the zip line. Because there would be no measureable change in secure habitat, OMARD, or TMARD, the proposed action would be consistent with management direction for motorized access from the Conservation Strategy.

Sleeping Giant ski area is already classified as a developed site within the point source human activities database. However, the proposed zip line would be an increase in human use levels and change in the type of use. The zip line would be a day use recreation area, and therefore opportunities for mitigation focused on this type of use elsewhere in the Shoshone #4 BMS. No socially acceptable opportunity for mitigation could be determined in this BMS, partially due to the several developed sites that were already closed in the 1990's.

The Blackwater Picnic Area/Fishing Access site in the Shoshone #1 was, however, determined to be available for mitigation of the Sleeping Giant zip line (Figure 3.2). This is a day use recreation site with parking area and turnaround, four picnic tables, an outhouse, a walking path to the pond, and a small boardwalk with three benches and a dock around part of the pond and a small wooden dock. The pond is stocked by the Wyoming Game and Fish Department to provide angling opportunity.

Although in a separate BMS, the site is located in the North Fork valley only about 10 miles from Sleeping Giant. This is well within the home range of a grizzly bear, and meets the biological intent of the direction to mitigate within the same BMS. Mitigation would involve removal of the picnic tables, outhouse, turnaround, and benches around the pond. Only the parking area and walking path to the pond and dock would remain for fishing access. It would no longer be used as a picnic area or rest stop, so overall human activity levels would decrease and are expected to be low. The potential for conflicts related to attractants would also diminish. The mitigation work described above would be completed prior to construction of the zip line at Sleeping Giant.



Figure 3.2. Developed sites in the Shoshone Bear Management Unit from the 1998 baseline. Sites changed since 1998 as well as those that would change after the proposed action are annotated.

Additionally, two camp sites within the Newton Creek Campground were washed out by flooding around 2005. This campground is located within the Shoshone #1 BMS (Figure 3.1), on the North Fork Shoshone River about nine miles from the Sleeping Giant ski area. Although the campground is in a different BMS, the same rationale applies for using it as mitigation as was described for the Blackwater Picnic Area above. The sites lost to flooding were part of the 1998 baseline, and the Forest would commit to not reconstructing these campsites in order to use them as mitigation for the zip line. The number of campsites in the Newton Creek Campground would remain at 29, compared to the pre-flood level of 31.

Mitigation of the zip line would be achieved by calculating the total capacity of the Blackwater Picnic area (which would be closed) and the campsites at the Newton Creek Campground (which the Forest would commit to not reconstructing), and using this to set the maximum annual capacity of the zip line (expressed in user-days). This approach has the advantage of setting a capacity for the zip line with a unit of measure common to other developed sites, rather than trying to calculate capacity (which is inherently difficult) and then attempting to mitigate for it. Additionally, future increases in use would not be allowed without additional mitigation.

The capacity of the Blackwater Picnic area was calculated by multiplying the number of sites (4), by the number of “persons at one time” assigned to each site by the Forest’s recreation site facility master plan (5), by the number of use periods each day (2, one for lunch and one for dinner), by the number of days the site is open (approximately 101 days from 6/20-9/30). This yields a capacity of 4,040 user days each year.

The capacity of the camp sites at the Newton Creek Campground was calculated by multiplying the number of sites lost to flooding (2), by the number of “person’s at one time” assigned to each site by the Forest’s recreation site facility master plan (5), by the number of days the site is open each year (approximately 160 days from 5/20-10/30). The total capacity available for mitigation would therefore be 5,630 user days, and use of the zip line each year would be capped at that number.

Overall, there would no increase in developed site capacity and lower overnight capacity in the Shoshone BMU compared to the 1998 baseline. It is inherently very difficult to quantify the net change in the potential for conflicts related to attractants at day use sites compared to the 1998 baseline as a result of closing the Blackwater Picnic Area and two sites at the Newton Creek Campground while increasing human activity and season of use at Sleeping Giant ski area. Considering these changes in developed sites along with the Forest Service commitment to filling a position whose major job duties will include food storage order compliance and education on the North Fork corridor, which has been effective at helping to prevent bear-human conflicts in the past, the overall potential for attractant related conflicts and subsequent bear mortality in the Shoshone BMU would remain similar to the 1998 baseline. This is the primary issue that needs to be addressed through mitigation.

Other issues associated with developed sites and needing mitigation under the conservation strategy includes habitat loss and increased access to surrounding habitats (Interagency Conservation Strategy Team 2007, page 42). There would be no habitat loss or increase in human access to surrounding habitats due to the zip line. Therefore, the intent of the Conservation Strategy would be met.

Canada Lynx

Alternative 1: No Action.

Direct and Indirect Effects

No effects to lynx are expected under this alternative.

Alternatives 2 and 3: Proposed Action.

Direct and Indirect Effects

The Sleeping Giant Ski Area is a small ski area with minimal development compared to many ski areas elsewhere in the western U.S. All project activities would occur within the existing permit boundary. The proposed zip line and tubing area would not affect the ability of lynx to travel through or around the area due to the small scale of the developed area. Foraging or denning habitat does not occur within the area to be developed, and therefore would not be affected.

Gray Wolf

Alternative 1: No Action.

Direct and Indirect Effects

No effects to gray wolves are expected under this alternative.

Alternatives 2 and 3: Proposed Action.

Direct and Indirect Effects

Gray wolves may be affected by a variety of human activities that cause disturbance or alter habitat. The increased human presence associated with operation of the zip line, tubing area, and expanded lodge could cause disturbance and/or displacement of gray wolves and/or their prey species. However, the area affected is small in scale. Increases in human activity would be mostly during diurnal hours. Wolves may continue to use the area during nighttime hours. Any effects would be limited to displacement of wolves foraging or travelling in the project area or their prey, mostly during daylight hours. These effects would be discountable.

Sensitive Species

All Alternatives

Direct and Indirect Effects

Species listed in Table 3.2 with no suitable habitat or that are not present in the project area would not be affected and are not discussed further in this analysis.

Several species have suitable habitat present in the project area. None of these species would be affected by any alternative. These species and the rationale for concluding that there would be no effects are discussed below:

River otter: River otters are known to inhabit the North Fork Shoshone River. Their diet is largely fish. No effects to prey populations or otter habitat in the river are expected.

American Marten: Marten habitat is mesic, late successional conifer forest which is found adjacent to the proposed zip line course. The proposed zip line route is too open for quality marten habitat. Projects involving vegetation treatment in marten habitat are of greatest concern for this species. No vegetation treatment is proposed that would alter marten habitat.

North American Wolverine: There is no denning habitat present. Wolverines are very uncommon but likely travel through the area on rare occasions. They would be able to travel through the zip line area during season or times of day when human activity is low, or around the zip line.

Rocky Mountain Bighorn Sheep: The project area is classified as yearlong habitat for bighorn sheep according to Wyoming Game and Fish Department data. It is not

considered crucial seasonal range. Bighorn sheep are generally not present during the time of year when the zip line would be operational.

Bald Eagle: Bald eagles may occasionally forage along the river in the vicinity of the project area. Bald eagle foraging would not be affected under either alternative. There are no nesting territories in the area.

Harlequin Duck: There are no records of harlequin ducks occurring in the project area. Harlequin ducks are sensitive to human presence during the breeding season. Any additional human activity associated with project alternatives would be near existing facilities that already have human activity.

Northern Goshawk: Goshawks are potentially sensitive to vegetation management activities and human activity near nesting territories. There are no known goshawk nesting territories in the project area, although they may occasionally use the area for foraging. No vegetation management activities are proposed.

Boreal Owl: Boreal owl habitat may be affected by vegetation management projects. No vegetation management projects are proposed.

Black-backed Woodpecker: Black-backed woodpecker habitat may be affected by vegetation management projects. No vegetation management projects are proposed.

Three-toed Woodpecker: Three-toed woodpecker habitat may be affected by vegetation management projects. No vegetation management projects are proposed.

Olive-sided flycatcher: Olive-sided flycatcher habitat may be affected by vegetation management projects. No vegetation management projects are proposed.

Columbia Spotted Frog: Marginal spotted frog habitat is associated with the North Fork Shoshone River in the project area. There are no records of spotted frog occurrence, and no activities are proposed that would alter their habitat.

Management Indicator Species

All Alternatives

Direct and Indirect Effects

Bighorn sheep, bald eagles, peregrine falcons, marten, northern goshawks, and grizzly bear were addressed in the threatened and endangered species or sensitive species sections, and therefore will not be addressed here. Species listed in Table 3.3 with no suitable habitat or otherwise not present in the project area would not be affected under any alternative and will not be discussed further.

Elk: The project area is classified as spring-summer-fall range. Elk primarily use the project area in transition between winter range in the lower North Fork corridor and summer ranges in the adjacent higher elevations. They are not commonly found in the project area during the operational period for the zip line. No effects to elk are expected.

Mule Deer: The project is spring-summer-fall range for mule deer. No designated crucial seasonal range is present. Some temporary displacement and disturbance of deer would occur, but large areas of habitat are present adjacent to the project area during the season of operation for the zip line where deer may forage free of human disturbance. The effects of these alternatives would be discountable.

Moose: Moose are found in the project area year-round, although there is no designated crucial seasonal range for moose present. While there are no population estimates for moose in the area, they are at low densities in the project area and the population trend is downward. While individual moose may be subject to disturbance and displacement, no crucial range would be affected and the project is of such a small scale relative to the amount of moose habitat available that the effects would be discountable to the population as a whole.

Blue Grouse: Blue grouse are occasionally present in the project area. Projects involving vegetation management are of greatest concern for this species. Vegetation management is not proposed, therefore there would be no effect to blue grouse under any alternative.

3.5 Watershed Resources

3.5.1 Hydrology

Affected Environment

Existing Conditions

A formal BMP review occurred in 2010 at Sleeping Giant. One of the major concerns that came from this review was the need to implement stormwater controls for hillslope erosion and waterway direct drainage. Following this review, mitigation measures were increased, and effective practices have been established.

The ski area is located predominantly within the Upper North Fork Shoshone River (1008001201) with the eastern edge within the Middle North Fork Shoshone River (1008001202), and is subdivided by 4 sixth level hydrologic units (HUC): Libby Creek (100800120201), Grinnell Creek (100800120105), Upper North Fork Shoshone River (100800120101), and Middle Creek (100800120104) (Table 3.4 and Figure 3.1).

Table 3.4. Sixth level hydrologic unit codes.

<u>HUC 6 Name</u>	<u>Total Acres</u>	<u>Acres in Permit Area</u>
Libby Creek	27,694	207
Grinnell Creek	19,398	6
Upper North Fork Shoshone River	42,625	916
Middle Creek	23,197	14

Climate: Average precipitation ranges from 19 to 25 inches annually. The area is snow dominated with mixed rain and snow occurring in May and June (University of Wyoming 2012). Thundershowers are typical for the summer months.

Water Resources: There are numerous intermittent drainage areas (less than 0.5 square miles) within the sixth level HUCs bisected by the permit area. Streams are high gradient in the upper elevations with either cascade or step-pool characteristics and transition into

riffle dominated reaches before developing into alluvial fans as they approach the North Fork Shoshone River.

There are no perennial drainages within the project area, but four named perennial drainages within the Sleeping Giant permit area, Fifty Mile Creek, Grinnel Creek, Canfield Creek, and the North Fork Shoshone. There are several other unnamed drainages (predominantly intermittent), but only one of these is currently within the groomed area of the ski hill. This stream was diverted historically to its current location.

Wetlands can be found throughout the project area. There are isolated hillside seeps that create wetland habitat in the permit area, but more extensive wetland areas are immediately adjacent to perennial stream channels.

Surface Water Quality: Water qualities of the streams in the permit area are either Class 2AB (Grinnel, Canfield, North Fork Shoshone) or Class 3 (Fifty Mile and the unnamed streams), according to the Wyoming DEQ's Wyoming Surface Water Classification List (2001). There are no streams in the analysis area listed on Wyoming's 303(d) list (waters with water quality impairments).

Streams classified as 2AB:

“are those known to support game fish populations or spawning and nursery areas, at least seasonally, and all their perennial tributaries and adjacent wetlands and where a game fishery and drinking water use is otherwise attainable.” (DEQ 2001)

Class 2AB waters have designated uses including drinking water supplies, game and non-game fisheries, fish consumption, aquatic life other than fish, primary contact recreation, wildlife, industry, agriculture, and scenic value. Streams classified as 3B waters are defined as:

“intermittent and ephemeral streams with sufficient hydrology to normally support and sustain communities of aquatic life including invertebrates, amphibians, or other flora and fauna which inhabit waters of the state at some stage of their life cycles.” (DEQ 2012)

Class 3 designated uses include: aquatic life other than fish, primary contact recreation, wildlife, industry, agriculture, and scenic value.

A full range of water quality parameters apply to these designated uses. Water quality criteria that are most pertinent, relative to this assessment, include: settleable solids; floating and suspended solids; taste, odor and color; human health; protection of aquatic life; turbidity; dissolved oxygen; temperature; pH; fecal coliform bacteria; and biological. Detailed descriptions of these criteria are found in the Wyoming DEQ water quality rules and regulations (DEQ 2012).

Water Rights: Per the State permit, snowmaking activities can to utilize 0.92 cubic feet per second of water from the North Fork of the Shoshone River for up to 330 total hours of operation. The current lances are designed to cover approximately a 40 foot radius. On the snowmaking hill this equates to 5.6 acres of snowmaking within the sixth level HUC, Upper North Fork Shoshone River drainage, or less than 1% of the watershed. Because

this watershed is considered a composite, this area was also compared to only that drainage area that was applicable to the use area. This equated to approximately one percent of the area that drains the use area (Figure 3.4).

Snowmaking Chemical Additives: There are no chemicals used during the snowmaking process, and this includes nucleating agents and surfactants.

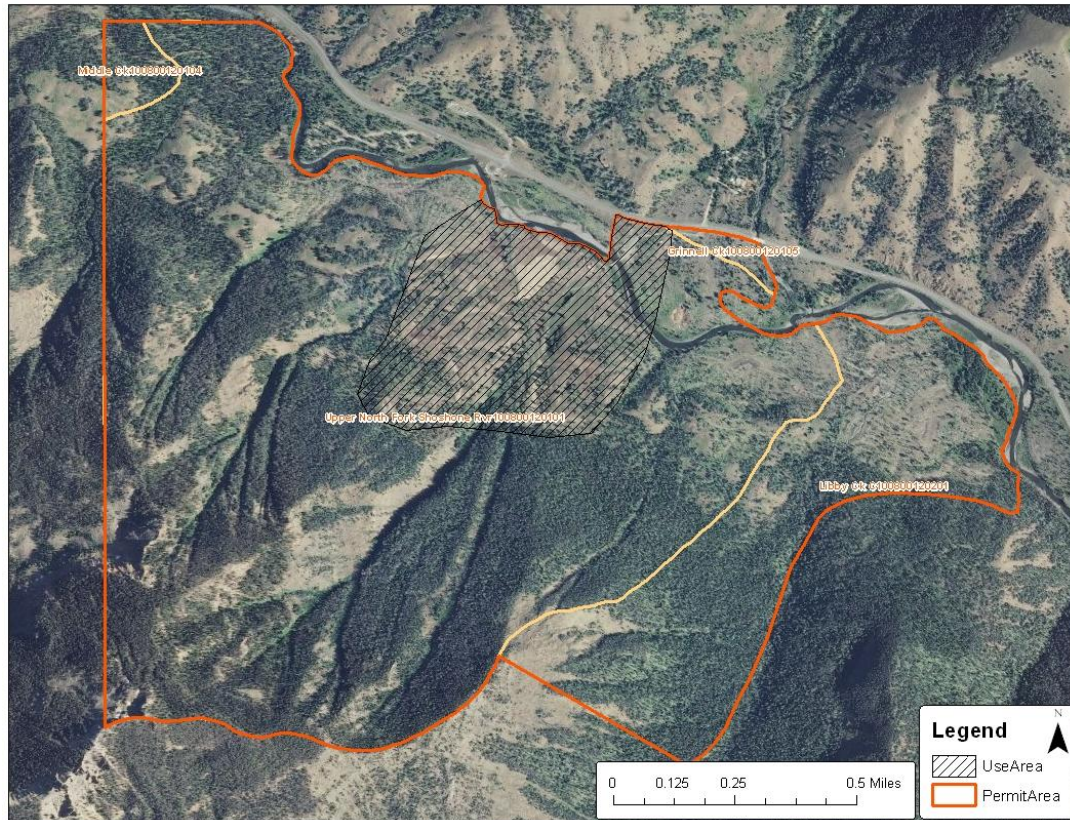


Figure 3.3. Permit area and use area as shown within the sixth level HUCs.

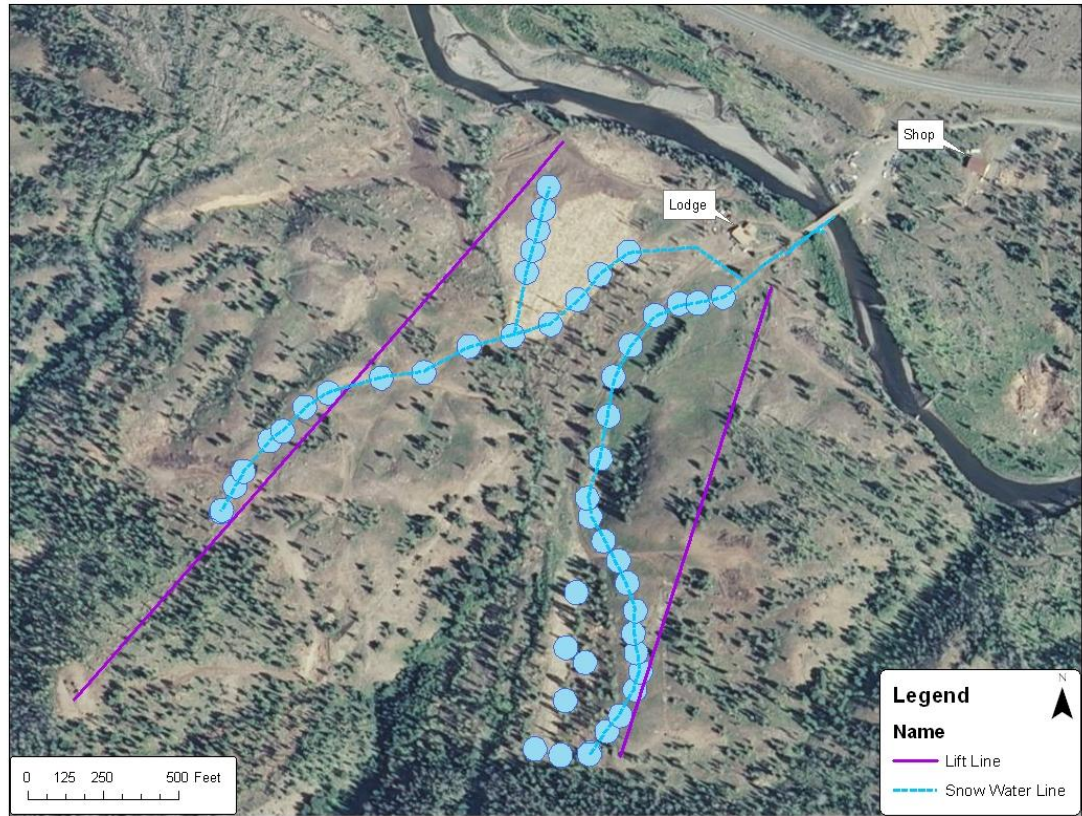


Figure 3.4. Existing snowmaking lines and lance coverage areas.

Affected Environment

The watershed resource influences related to the proposed projects (Chapter 2) are summarized in Table 3.5 and Figure 3.5.

Knowing that the density of artificial snow is generally greater than that of natural snow, an average density (high range) could be considered 30% or 300kg/m^3 (McClung and Shaerer 1993). The allowed water, per the water right, is 0.92 cfs, and there are 330 hours allowed for operation of the snowmaking. This equates to roughly an additional 1.34 feet of water over the surface area each of the blue snow lances for the existing snowmaking area¹. If an additional 100 hours were requested, this would, for example, be an additional 0.41 feet. The area covered by the lances in the snow tubing area would receive an additional 2.2 feet of water over the 0.5 acres where the lances provide artificial snow. Additional evaporative losses would occur to each of these values throughout the winter and spring seasons, and some degree of snow redistribution occurs through grooming.

¹ Original calculations were based on acre-feet of water and then distributed over the total acres for each of the existing and proposed snowmaking lance coverage areas. For example, if the lance coverage areas were visualized as swimming pools, there would be the stated additional water depth in each pool.

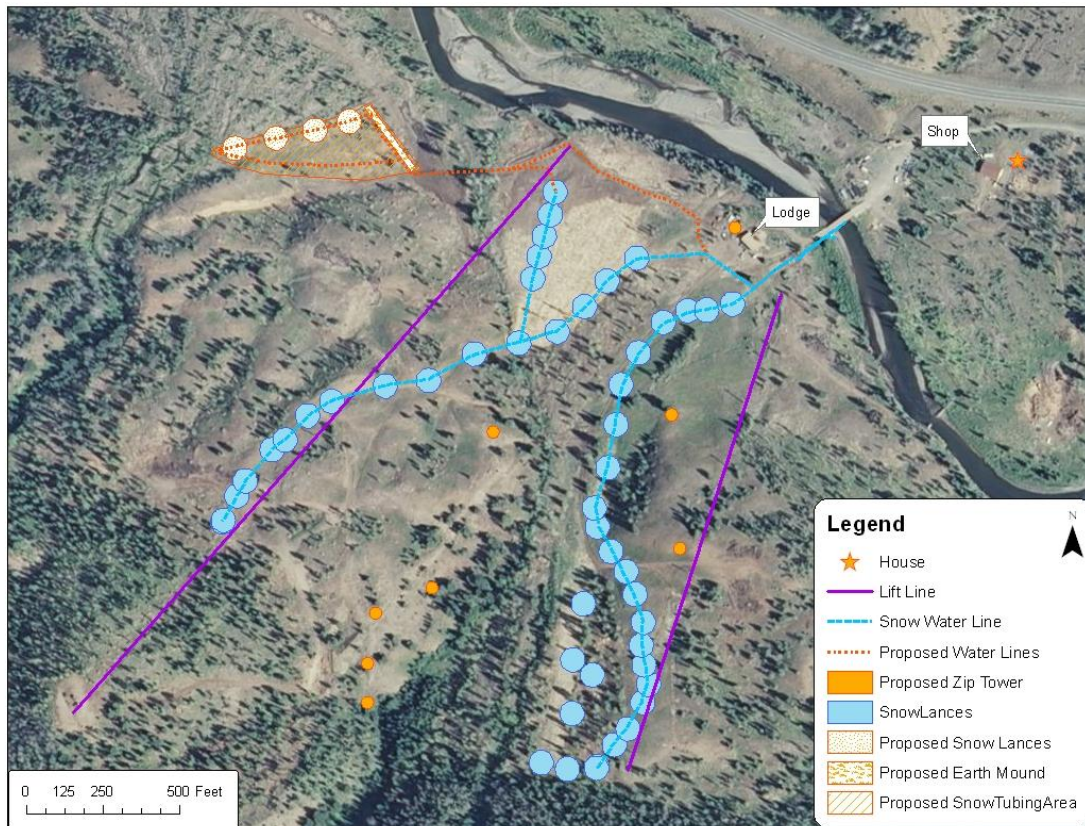


Figure 3.5. Existing and proposed activities.

The proposed and existing activities represent the following surface areas (initial disturbance surface areas with the exception of snow making which is the surface area that the artificial snow covers):

Table 3.5. Acres of existing and proposed activities.

<u>Activity</u>	<u>Acres</u>
Existing Snowmaking Lance Coverage Area	5.6
Existing Maintenance Trails	1.2
Proposed Water/Utility Lines	0.1
Proposed Snowmaking at Snow Tubing Site Lance Coverage Area	0.5
Proposed Snow Tubing Area	2.2
Proposed Zip Towers	0.2

Environmental Consequences

Effects Summary

The terrestrial ecosystem within a watershed naturally serves as a buffer functioning to filter contaminants, and stream conditions (e.g., in-channel sediment, depositional patterns, width, and depth) reflect the cumulative effects of the watershed upstream of that particular point.

Within ski areas there are some key development actions that may lead to effects on watershed processes. For this effort, those that most relate to this project are forest clearings which create gravitational flow paths for runoff and result in vegetation changes and artificial snowmaking which can create changes in snowmelt (Wemple et al. 2007).

If implemented and maintained, the use of BMPs will mitigate effects to water resources. Effects as related to sedimentation, bed and bank stability, flow regimes, water purity, and special areas are expected to minor and insignificant.

Effects

Sediment:

Most sediment delivered to streams comes from a source zone along streams whose width depends on topography, soils, and ground cover. Connected disturbed areas like roads and other disturbed soils near streams can deliver sediment during runoff events. Sediment deposits in streambeds can harm insect populations and fish reproduction.

Rivers function in a state of dynamic equilibrium and are constantly adjusting to changes in climate and landscape which are shown thru changes in sediment and water inputs. The adjustments occur in the form of lateral migration and changes in channel width, depth, and sinuosity. Activities that increase sediment beyond what the channel can move can result in deposition in the interstitial spaces which reduces hyporheic² zones and fish spawning areas (Palmer et al. 2009).

Most applicable to the ski area is overland flow derived from snowmelt. Artificial snow is generally denser, and as such snowmelt can occur more slowly than natural snow (Shanley and Wemple 2002; David et al. 2008). This delayed response reduces peak melt volumes and consequently the degree of sediment transport.

Alternative 1: No Action.

Direct and Indirect Effects.

Potential effects could include sediment delivery to water bodies, wetlands, or off the ski hill in general from snowmelt or rain by ski trials, maintenance trails, and overland flow (Shanley and Wemple 2002, Molles and Gosz 1980). Currently, the implementation of BMPs at Sleeping Giant has made the effects of sediment mobilization insignificant. Implemented BMPs include slope revegetation, drainage ditches, roughened slope breaks, filter strips, maintenance access trail drainage structures such as rolling dips, areal straw coverage, and straw bales utilized for erosion control barriers, all of which have been effective in mitigating effects.

Alternatives 2 and 3: Proposed and Modified Proposed Actions.

Direct and Indirect Effects.

Clearing, slope grading, and ground disturbance associated with utility line installation or general construction activities for the zip line tower foundations, building foundation, or towline facilities can expose and compact soils (USDA 2012). Under Alternatives 2 and

² Region beneath and lateral to the stream where there is a mixing of surface water and shallow groundwater.

3, there would be approximately 3,200 square feet of ground disturbance associated with the installation of the proposed structures over three years.

Indirect effects are accelerated runoff and erosion that could be transported to water resources (USDA 2012). In addition, storm water erosion control measures and BMPs will be in place prior to ground disturbing activities. On the tubing hill, the berm will also serve as a sediment trap for runoff that could occur from snowmelt. Implementation and maintenance of Best Management Practices will mitigate these effects.

Bed/Bank Stability:

Bed and bank stability can be damaged from vehicle impact or degraded bank vegetation. Streams can be made wider and shallower, pools and overhanging banks can be destroyed, and much sediment can be added to streams.

Alternative 1: No Action.

Direct and Indirect Effects.

Effects of not implementing the proposed actions would not result in any changes to the existing stream channel bed and banks. The return flow from draining the main snowmaking line is in a stable location not creating bank degradation.

Alternative 2 and 3: Proposed and Modified Proposed Action.

Direct and Indirect Effects.

The snow tubing location is on an inactive alluvial fan. As long as only minimal hillslope modifications are implemented when removing existing stumps, the activities are not expected to create any changes to the alluvial fan. Implementation and maintenance of Best Management Practices will mitigate effects.

Flow Regimes:

Flow regimes can be altered by major changes in cover type or ground cover, or dense road networks. Water temperature and chemistry, sediment transport, aquatic habitats, and aquatic life cycles can be degraded.

Flow alteration is considered a key factor in how climate change or other stressors affect river ecosystems. Maintaining natural variations in flow is critical to both stream health and ecological integrity. Natural flow regimes are representative of the unaltered landscape and reflect the interaction of precipitation, temperature, soils, geology, and land cover. Moreover, these flow regimes support different ecological communities (Palmer et al. 2009).

Water withdrawals have the potential to result in dewatering that can affect habitat for aquatic-dependent species. In contrast, the additional water from snowmaking activities could result in increased runoff that causes changes in channel morphology (USDA 2012).

Alternative 1: No Action.

Direct and Indirect Effects.

The amount of flow drawn out of the North Fork of the Shoshone is less than one cubic foot per second which is not significant when compared to existing flows. Relative to the potential increase in runoff, the BMPs control overland flow preventing direct flow from entering existing waterways. Energy from overland flow is dissipated by established hill slope vegetation and streamside buffers. As such, the majority of water infiltrates into the soil. Under the No Action, as long as the BMPs are maintained, this would remain.

Alternative 2 and 3: Proposed and Modified Proposed Action.

Direct and Indirect Effects.

There will be no change to the amount of water drawn from the North Fork for the snow making, so the effects don't differ from the No Action alternative. With regard to the additional snowmaking, this occurs in a different drainage path than that of the existing snowmaking, and as shown with the existing snowmaking, due to BMPs there is no direct runoff into water bodies that alters flow regimes.

Water Purity:

Water purity can be degraded by placing concentrated pollutant sources near water bodies or applying harmful chemicals in or near water bodies. Degraded water purity can impair or destroy use of the water by aquatic biota and humans.

Alternatives 1, 2, and 3: All Alternatives.

Direct and Indirect Effects.

Water purity on ski hills is most relevant to sedimentation resulting from runoff from disturbed soils or roads, and the release of chemical inputs from snow making additives or de-icing salts applied to parking lots (Shanley and Wemple 2002). Snow making additives are not utilized at Sleeping Giant nor are de-icing salts utilized in quantities that are significant. As such this subject has been analyzed within the Sediment section.

Temperature and Oxygen:

Summer water temperature is increased, and winter water temperature is decreased, by removing shade or damaging banks so streams are wider and shallower. Dissolved oxygen is usually reduced when summer water temperature is increased. Such impacts impair or destroy the suitability of water bodies for aquatic biota.

Alternative 1: No Action.

Direct and Indirect Effects.

Under the No Action alternative no management actions would be implemented; therefore, no direct human caused impacts to temperature or dissolved oxygen associated with this project proposal would occur. These activities would have no measurable effect on dissolved oxygen capacity as the low temperature and fast water movement lead to supersaturation of oxygen throughout mountain stream systems. The absence of management actions would result in no change in the trajectory of downstream temperature or oxygen conditions.

Alternative 2 and 3: Proposed Action and Alternative Action.

Direct and Indirect Effects.

Under Alternatives 2 and 3, there would be approximately 3,200 square feet of ground disturbance associated with the installation of the proposed structures over three years. None of this ground disturbance would occur in the riparian corridor and thus there would be no change to stream shading and thus no measurable impact on temperature or dissolved oxygen. The tubing area would require additional hours of draw from the existing water right, but would not increase the draw at any point. Additionally, the water right would be operated only in winter. The effects of this project on stream temperature or oxygenation from a fisheries standpoint would be miniscule (Poole and Berman 2001). There would be no significant change to stream flow, riparian shading, or significant changes to sedimentation if appropriate management practices are followed, so there would be no effect on stream oxygen or temperature either downstream or in the future.

Monitoring

Implementation and effectiveness monitoring occurs both formally and informally during and after implementation. Formal monitoring occurs by both interdisciplinary teams and through documented site visits by the timber sale administrator and the hydrologist. Informal monitoring occurs by any of the following Forest staff: hydrologist, soil scientist, fisheries biologist, timber sale administrator, or engineering representative.

3.5.2 Fisheries**Affected Environment**

The North Fork of the Shoshone (North Fork) and its tributaries contains populations of fish that are resident year-round. In addition, migratory populations from Buffalo Bill Reservoir, which travel upstream for spawning and rearing and then return to the reservoir. The unconsolidated volcanic soils and steep slopes that typify the drainage are highly erodible. As a result, the North Fork stream system upstream of the reservoir is typically braided and unstable with heavy bed loads, especially during heavy runoff events.

Blackwater pond is a manmade reclamation pond located near the North Fork downstream of the proposed action. The pond is small (< 1 acre) and shallow with associated wetland habitat. Wyoming Game and Fish Department stocks the pond annually with approximately 100 Yellowstone cutthroat trout (YCT, *Oncorhynchus clarkii bouvieri*) that do not reproduce naturally in the pond (Burckhardt pers. comm. 2012). It receives very low fishing pressure.

Sensitive Species

The North Fork contains YCT, a region 2 sensitive species, although past stocking of rainbow trout (*Oncorhynchus mykiss*) in the system have resulted in hybridization in both reservoir and river. There are no known conservation populations of YCT in North Fork except upper Grinnell Creek. The North Fork and its tributaries also contain mountain suckers (MTS, *Catostomus platyrhynchus*), a spring spawning nongame species that is

designated sensitive in Region 2. They are common throughout the drainage. Finally, there are lake chubs (LKC, *Couesius plumbeus*) found in the slower backwaters and lower main stem of the North Fork near the reservoir. Lake chubs are not common in the drainage.

Management Indicator Species

In the current SNF Forest Plan, game trout are the forest Management Indicator Species for aquatic habitat. Game trout represent a good indicator of aquatic habitat quality because of their dependence on relatively high quality cold water environments and their sensitivity to habitat degradation associated with in-stream and riparian activities. The needs of game trout were a major factor in the formulation of Forest Plan goals (FP III-8-9) and standards and guidelines for aquatic and riparian habitat (FP III 207-222). Game trout populations in the North Fork of the Shoshone include: rainbow trout, Yellowstone cutthroat trout, brook trout (*Salvelinus fontinalis*), and brown trout (*Salmo trutta*).

The North Fork of the Shoshone is the only water body that would be directly impacted by the proposed activities. There are populations of YCT and MTS adjacent to the project area, although the YCT population is genetically compromised and does not constitute a conservation population (Range-wide YCT Conservation Team 2009). Lake chub have not been found on the North Fork of the Shoshone this far from the reservoir, but do exist in lower reaches of the drainage.

Environmental Consequences

Effects Summary

While there may be minor increases in sediment associated with the proposed action ground disturbance, they could be largely mitigated, and would not significantly impact sensitive or MIS fish species and would return to baseline levels following revegetation. Access to fishing on Blackwater Pond would not be impacted by the proposed mitigation measures.

Effects

Management Indicator Species

Alternative 1: No Action.

Direct and Indirect Effects.

There are no fish populations within the project area. The North Fork of the Shoshone is adjacent to the project area and contains viable populations of game trout. In the absence of action, there would be no effect on game fish. In the absence of action there would be no effect on game fish populations in the future or off-site.

Alternative 2 and 3: Proposed Action and Alternative Action.

Direct and Indirect Effects.

The project actions would not have any direct effects other than the negligible increases in sediment as described above. These effects would be negligible on game trout. The

mitigation project proposed for Blackwater Pond would remove infrastructure, but would not impact fishing access or fish habitat in any way. The project actions would not have any direct effects other than the negligible potential increases in downstream sediment as described above. These effects would be negligible on game trout. Any minor increases in sediment would decrease as disturbed areas became revegetated.

Sensitive Species

Alternative 1: No Action.

Direct and Indirect Effects.

There are no fish populations within the project area. The North Fork of the Shoshone is adjacent to the project area and contains viable populations of Yellowstone cutthroat trout (as discussed above) and mountain suckers. In the absence of action, there would be no effect on sensitive species. In the absence of action there would be no effect on sensitive species populations in the future or off-site.

Alternative 2 and 3: Proposed Action.

Direct and Indirect Effects.

The project actions would not have any direct effects other than the negligible increases in sediment as described above. These effects would be negligible on game trout. The mitigation project proposed for Blackwater Pond would remove infrastructure, but would not impact fishing access or fish habitat in any way. The project actions would not have any indirect effects other than the potential minor short term increases in downstream sediment as described above. These effects would be negligible on game trout. Any increases in sediment would decrease as disturbed areas became revegetated.

Monitoring

Wyoming Game and Fish Department (WGFD) population monitoring currently occurs annually at several sites downstream from the project area. In addition, there has been monitoring on tributaries such as Libby Creek and 50 Mile Creek in the last year. WGFD monitoring in the North Fork Shoshone corridor will continue into the foreseeable future and they will continue to share such information with the Forest Service fisheries staff. Monitoring associated with mitigation measures will take the form specialist site reviews and integrated BMP reviews as needed in the years following implementation.

3.5.3 Soils

Affected Environment

The ski area is within the boundaries of the Soil Survey Area WY656. Soil map unit data and interpretations are located in the project file (NRCS, 2012). Dominant soils within the analysis area are from the Inceptisol, Mollisol and Alfisol soil orders. Soils are developed from the Absaroka volcanics. Major management considerations for these soil types include steep slopes, surface compaction hazard, erodible surface, mass movement potential, soil rutting hazard. The area disturbed is estimated at less than one acre.

Soil Productivity

Soil productivity takes into account five considerations: 1) soil compaction or rutting, 2) soil fertility and nutrient removal, 3) soil heating, 4) soil erosion, and 5) regeneration potential. Regional guidelines for protecting the soil resource (FSH 2509.18-92-1) state that no more than 15 percent of an area will be left in a detrimentally compacted, displaced, puddled, severely burned, and/or eroded condition. This would be met through the project timing and the project design for project implementation in Chapter 2. In this analysis, soil erosion and re-vegetation of the disturbed sites are brought forward in analysis.

Soil Erosion Component of Productivity

Severe erosion can impair long term soil productivity if soils are heavily disturbed on shallow or highly erodible soils.

The dominant erosion process within the analysis area is Horton overland flow. This process occurs primarily during the summer thunderstorm period. Runoff becomes concentrated and develops into debris flows that can cause alteration to 1st and 2nd order drainages. Subsequently, there is deposition of sediment into 3rd and 4th order mainstream channels.

Natural sediment source areas include erosion from uplands and scour of stream banks. Both snow melt and rain storm stream flows carry large amounts of suspended and wash load sediment. Large volumes of bed load sediment can be mobilized and moved during the snow melt season. During summer thunderstorm events considerable amounts of earthen material are eroded from uplands and ephemeral channels, and delivered to main stem channels through debris flows.

Erosion hazard is slight on 0 to 14 percent slopes, moderate on 15 to 35 percent slopes, severe and very severe on slopes greater than 35 percent (NRCS 1997). All soils are given a moderate to severe rating primarily where there are loamy surface textures on slopes are greater than 35 percent. The majority of project area has an erosion hazard rating of moderate, primarily a result of the fine surface soil textures.

Regeneration Hazard Component of Productivity

Regeneration may be impeded on marginal sites due to seedling mortality, plant competition, and other factors. Seedling mortality refers to the probability of the death of naturally occurring or planted tree seedlings, as influenced by kinds of soil or topographic conditions. Seedling mortality is caused mainly by too much water (soil wetness) or too little water (soil droughtiness).

Environmental Consequences

Effects Summary

Some soil impacts are possible as a result of either action alternative, but project design features and the minimal area of disturbed soils would mitigate any adverse impacts to soils.

Effects

Alternative 1: No Action.

Direct and Indirect Effects.

Alternative 1 would not result in impacts to soil health and productivity, soil compaction or rutting, soil fertility and nutrient removal, soil heating, soil erosion or regeneration hazard from management actions. Existing conditions would continue at current levels.

Alternatives 2 and 3: Proposed and Modified Proposed Action.***Direct and Indirect Effects.******Soil Erosion***

Under the action alternatives, surface erosion amounts would be minimal due to the small area disturbed (less than one acre). Reclamation plans and project design criteria (Chapter 2) will minimize any potential erosion. Soil loss, if any will occur due to normal runoff activity during high intensity summer rain fall events until vegetation is established.

Regeneration Hazard

Under the action alternatives, reclamation plans for the zip line towers and tubing area should achieve adequate vegetative cover after three years. There may be short term effects while vegetation is getting established.

3.5.4 Geology and Geologic Hazards

Affected Environment

Soil creep, debris avalanches and flows, slumps, and earth flows can occur on unstable slopes if vegetation is removed or runoff is emptied onto them. Hazard depends on type of disturbance, nature of earth material, and water content.

The Wyoming Geologic Survey has mapped the geologic hazards on the Forest (Case 1989). The primary processes found in the analysis are various combinations of debris flow and slope slumping.

Environmental Consequences

Effects Summary

The proposed actions have the potential to be impacted by the underlying geology of the area, but this eventuality is unlikely.

Effects

Alternative 1: No Action.***Direct and Indirect Effects.***

Under Alternative 1, existing geologic hazards and natural process would continue to alter the landscape. This is a natural process within the project area.

Alternatives 2 and 3: Proposed and Modified Proposed Action.***Direct and Indirect Effects.***

Under Alternatives 2 and 3, the proposed areas of disturbance at the ski area are minimal (less than one acre). It is unlikely that proposed activities will initiate landslides. There is the potential that the care taker house and existing storage building sites may be affected by debris flow activity at some point in time. This currently is an unlikely potential effect due to the highway and existing channel of Grinnell creek. Zip line towers and tubing hill areas have the potential to be affected by debris flow activity. This, too, is unlikely.

3.5.5 Special Areas (Watershed)

Affected Environment

Wetlands and Floodplains

Wetlands control runoff and water quality, recharge groundwater, and provide special habitats. Actions that may alter their ground cover, soil structure, water budgets, drainage patterns, and long-term plant composition can impair these values. Floodplains are natural escape areas for floods that temper flood stages and velocities.

Riparian Areas

Riparian ecosystems provide shade, bank stability, fish cover, and woody debris to aquatic ecosystems. They also provide key wildlife habitat, migration corridors, sediment storage and release, and surface-groundwater interactions. Composition and structure of riparian vegetation can be changed by actions that remove certain species and age classes. There are approximately 5 acres of riparian habitat in the vicinity of the project area, all of which are rated as fully functional.

Environmental Consequences

Effects Summary

There are very small sections of special area designation within the project area and they would be largely unaffected by the proposed activities.

Effects

Wetlands and Floodplains

Alternative 1: No Action.

Direct and Indirect Effects.

Through the implementation of BMPs, wetlands have been protected. Floodplains and wetlands would continue to function in their current capacity.

Alternatives 2 and 3: Proposed Action.

Direct and Indirect Effects.

There are not proposed actions within or directly adjacent to wetlands or floodplains that would cause negative effects to wetlands or floodplains. The Sediment section covers sedimentation into waterbodies including wetlands.

Riparian Areas

Alternative 1: No Action.***Direct and Indirect Effects.***

In the absence of any action adjacent riparian areas will continue to be fully functional and there will be no off-site effects. Ecological processes will continue into the future, potentially including conifer encroachment.

Alternative 2 and 3: Proposed Action and Alternative Action.***Direct and indirect Effects.***

The project activities do not encroach on the riparian vegetation near the project area. No ground disturbance will occur in or immediately adjacent to the riparian zone, so there would be no effects.

There will be no project activities that would change flow or stream stability in such a way as to impact riparian areas off site. Off site and future riparian function should continue on its current trajectory. There would be no effect associated with the proposed actions.

3.6 Fire and Fuels

Affected Environment

Fire activity has been increasing since 1988 with six large fires burning near the project area. Fuel loading around the ski area improvements at the base of the ski area is considered low due to recent timber harvesting and slash disposal increasing to moderate-high at the top of the current ski area.

The desired conditions would be that fuel loading is maintained at low to moderate levels around the ski area infrastructure to provide defensible space for protection as fires burn in the upper North Fork corridor.

Increasing fire activity is likely a result of several factors including drought, insect epidemics, maturity of trees, and past fire suppression actions. Five small fires (1/10 acre) and six large fires (> 100 acres) have occurred within or adjacent to the project area. To date, no fire has burned into the project area, although with each large fire, structure protection actions were taken for the ski area infrastructure.

Fuel loading within the ski area project area would be considered low (<8 tons/ac) to moderate (<12 tons/ac) in the current footprint of the ski area due to recent timber harvesting and slash disposal. Within the upper third of the ski area, fuel loading would be considered moderate within the footprint and high (>40 tons/ac) above and on the east and west sides of the upper slopes of the permit area.

Timber harvesting removed a large percentage of the trees within the permit area, resulting in a discontinuous tree canopy that is resistant to crown fires. Areas west of the ski area on the upper slopes and above the ski area contain heavy fuel loading and continuous tree canopies that would sustain a crown fire and provide an ember source that could shower embers towards the ski area infrastructure. With low fuel loading around the infrastructure, spot fires are less likely to spread quickly and would be suppressed by protection resources.

The probability of fire burning onto the ski area remains high until the high fuel loading from recent insect epidemics is consumed.

Environmental Consequences

Effects Summary

Effect of a few trees cut and an increase in number of structures across the project area will not be measurable in terms of the indicators for this resource.

Effects

All Alternatives:

Direct and Indirect Effects

The proposed action would cut approximately 10-20 trees for the zip line location. Removing these few trees and the resultant slash will have minimal effect on increasing fuel loading around the new infrastructure. The increase in number of structures will be negligible as it is already within the ski area footprint where other structures are already located and protected with minimal increase in resources.

3.7 Silviculture Resources

Affected Environment

In terms of the forested resource in the project area (developed footprint of Sleeping Giant Ski Area), it is comprised mostly of recently salvaged stands that were cut in 2008 and 2010. Most of the stands within the project area had been heavily affected from mountain pine beetle, spruce beetle and Douglas-fir beetle beginning as far back as the late 1990's. Most of the forested lands within the project area are a mix of stands that have remnant trees leftover from the beetle epidemic and stands where most trees were harvested and the lands are now in regeneration status.

Environmental Consequences

Effects Summary

This project poses no major issues from a silviculture perspective. Effect of the removal of a few individual trees across the project area will not be measurable in terms of the indicators for this resource.

Effects

All Alternatives:

Direct and Indirect Effects

The proposed action would cut approximately a total of 10-20 trees scattered across the zip line location. Cutting 10-20 individual trees scattered across the project area will have no effect on age class, vegetative structural stage, vertical diversity or horizontal diversity.

3.8 Recreation

Affected Environment

The zip line as well as the snow tubing hill is within 1/2 mile of US highway 14/16/20, a busy corridor accessing Yellowstone National Park. Currently, snow tubing occurs in several miscellaneous locations along the North Fork highway corridor where a slope exists. Safe run out zones are difficult to come by. Some of the more popular locations are on the driveways of some recreation residences or at Pahaska Teepee where the run out zone is into the west end of the parking lot.

The removal of the Blackwater Picnic Area is being proposed as partial mitigation for the proposed Sleeping Giant zip line. Currently the picnic area is not handicap accessible, as it was designed to be. It is a day use motorized recreation area and has a paved parking area and turn-around loop, an outhouse, three picnic tables, three benches, and a walking path and dock for fishing access on the Blackwater Pond. All are in deteriorated condition. The pond is stocked by the Wyoming Game and Fish Department to provide angling opportunity. The proposed mitigation would involve removing the benches, picnic tables, loop, and outhouse. The parking area, path, and dock would remain as a fishing access. Newton Springs, a fully handicap accessible picnic area is within one mile from the Blackwater location.

Environmental Consequences

Effects Summary

The proposed action will provide additional recreation opportunities on the forest and will not significantly affect other recreation opportunities on the Wapiti ranger district. The Recreation Opportunity Spectrum (ROS) in the project area which provides for Existing and Potential Winter Sports Sites as well as for Rural and Roaded Natural Recreation Opportunities would not change. The project is consistent with Forest Plan standards and guidelines.

Effects

Alternative 1: No Action.

Direct and Indirect Effects.

Recreation opportunities on site would remain unchanged. The Blackwater Picnic area would remain as is. Recreation opportunities throughout the forest would also remain unchanged.

Alternatives 2 and 3: Action Alternatives.

Direct and Indirect Effects.

The project would expand the range of recreational and educational excursions available to visitors and increase recreational access to the forest canopy. The proposed snow tubing area would provide the public with a safe alternative for snow tubing and enjoying their public lands as well as increase the opportunities at the existing ski area. Traffic noise as well as noise from the river will drown out much of the noise from the people as

it does when the ski area is operating. The use of a rubberized zip line would eliminate any noise from the zip line itself.

The proposed zip line project would not significantly affect forest recreation resources on the Wapiti Ranger District. The proposed action, would not have any negative effects on any existing developed or dispersed recreation sites.

3.9 Socioeconomic Resources

Affected Environment

The Sleeping Giant Ski Area is located approximately 50 miles west of Cody, WY and 5 miles east of the entrance to Yellowstone National Park. Cody has a year-round population of 9,520. Because of winter weather conditions, the road beyond the ski area is closed between December 1 and May 1 each year limiting the traffic to primarily local residents. Because this road is the gateway for the East entrance to Yellowstone National Park, which in 2011, saw 400,741 visitors (YNP Statistics) there is the opportunity to draw a large number of additional guests during the summer season. There are currently 11 resorts and one organization camp located on National Forest System lands along the same road corridor which operate almost solely during the months of May to October because of the high volume of visitors available. The project's socioeconomic effect on the area will be measured by the change in direct visitor industry employment.

Environmental Consequences

Effects Summary

The Ski Area Recreational Opportunity Enhancement Act of 2011 was established to encourage outdoor recreation on the National Forest, concentrate highly developed recreation in areas that are currently the most developed sites in the national forests and enhance the long-term viability of ski areas on National Forest System lands and the adjoining rural economies (Wagner, 2011). Currently the Sleeping Giant Ski Area has 10,000 – 15,000 skier days per year and employs 36 people during the winter. Due to the increasing costs to maintain a ski area and the limited number of skiers available due to its seasonal accessibility, no-action could lead to the financial insolvency of the ski area. The addition of a snow-tubing area and summer zip line could increase the number of visitors and season of use, making the ski area financially viable and providing additional and year-round employment.

Effects

Alternative 1: No Action.

Direct and Indirect Effects.

There would be no change in the operating expenses or revenue structure for Sleeping Giant Ski Area. Without the additional income of a snow-tubing development and summer zip line/tour, the ski area may no longer be financially sustainable. The community could lose the only locally based downhill ski area and the 3 year-round positions and 33 winter positions it provides. Lodges that are open solely to provide housing for employees and visitors to the ski area would close during the winter months.

Alternatives 2 and 3: Proposed and Modified Proposed Action.**Direct and Indirect Effects.**

The proposed projects would expand winter operations and increase the length of use into the summer season potentially generating additional revenue stream and employing additional 2-3 staff during the winter and 6-10 staff in the summer. The zip line/tour would provide a recreation opportunity not currently available in the area. Since the Cody area already has a large tourist population in the summer, the addition of summer use at the ski area on lodging or eating establishments would be insignificant.

Environmental Justice

Executive Order (EO) 12898 (February 11, 1994) directs federal agencies to focus attention on the human health and environmental conditions in minority communities and low-income communities. The purpose of EO 12898 is to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.

Table 3.6 shows the minority characteristics of the three counties compared to Wyoming state statistics. Table 3.7 shows county and state poverty statistics, percent of individuals living below the poverty level, as defined by the U.S. Census Bureau. Because none of the counties in the project area contain low-income or minority populations as defined by EO 12898, no additional outreach or analysis has been completed. Low-income populations exist if 20% or more of the total population is at or below the poverty level, and a minority population exists if 50% or more of the total population is considered minority. Any management actions taken on the Shoshone National Forest will affect the surrounding population in a similar way – the potential impact will be felt proportionally by the total population surrounding the Forest.

Table 3.6. Minority component of population by county, 2000 (Taylor et al. 2008).

<u>County/State</u>	<u>Total Population</u>	<u>White</u>	<u>Black</u>	<u>American Indian</u>	<u>Asian or Pacific Islander</u>	<u>Other/Multi-Race</u>	<u>Hispanic Any Race</u>
Fremont	35,804	74.6%	0.1	18.8%	0.3%	1.8%	4.4%
Hot Springs	4,882	94.5%	0.3%	1.5%	0.2%	1.1%	2.4%
Park	25,786	94.5%	0.1%	10.4%	0.4%	1.4%	4.0%
Wyoming	493,782	88.9%	0.7%	2.1%	0.6%	1.3%	6.4%

Table 3.7. Percent of population living below poverty level by county, 2005 (Taylor et al. 2008).

	<u>Fremont</u>	<u>Hot Springs</u>	<u>Park</u>	<u>Wyoming</u>	<u>U.S.</u>
Poverty Level	14.9%	11.5%	10.3%	10.6%	13.3%

Given that no minority or low-income populations are identified in the affected area, there would be no disproportionate effect from any alternative on such populations regarding environmental justice concerns or factors.

3.10 Visuals

Affected Environment

The proposed project is within Management Area (MA) 1B as defined by the Shoshone National Forest Land and Resource Management Plan. The Landscape Character of the project area is divided into several common and distinct features: mountain tops, mountain slopes, mountain lakes, and dense forest. Existing vegetation within the project area is a combination of Engelmann spruce (*Picea engelmannii*), Whitebark pine (*Pinus albicaulus*), Douglas-fir (*Pseudotsuga menziesii*), limber pine (*Pinus flexilis*), Lodgepole pine (*Pinus contorta*), aspen (*Populus tremuloides*), and willows (*Salix spp.*). Most of the visually dominant forest types are in older age classes. Dead and dying trees from beetle kill, as well as recent forest fire activity is evident along the North Fork corridor.

Most of the existing visual condition of the project area meets retention / partial retention (VQO)³. However, the area around the existing storage building near visitor parking as seen from the North Fork Highway exceeds Forest Plan direction for this MA. This area visually dominates the landscape character with storage equipment, vehicles, current vegetation management, and debris. According to Management Area direction facilities may visually dominate but must harmonize and blend with the natural setting. The majority of the attractiveness or visual variety within the project area is class “A”, distinctive, especially in the areas where past management



Figure 3.6. Existing visual conditions.

³ Retention VQO provides for management activities that are not visually evident. Partial Retention VQO provides for management activities that remain visually subordinate to the characteristic landscape. Modification VQO may visually dominate the original characteristic landscape. However, activities of vegetative and land form alteration must borrow from naturally established form, line, color, and texture so completely and at such a scale that its visual characteristics are those of natural occurrences within the surrounding area or character type.

activities or fire are not evident. Other portions of the project area are variety class “B”, more uniform forest stands with landform diversity and some interspersed aspen trees.

Generally the area is highly scenic, unique, and distinct due to the landscape variety in vegetation, geology, water features, and dramatic landforms. Recreation user expectations and concerns are high along water and travel routes and wilderness use areas especially in the foreground view distance zone. The existing facilities associated with the resort operation such as chair lifts, loading / unloading stations, and towers blend fairly well with the existing landscape features.

Environmental Consequences

Effects Summary

The project area currently meets VQO Modification with the exception of the area immediately surrounding the existing storage building at the parking area. The proposed actions will also meet VQO Modification provided visual impacts associated with the equipment and storage area are removed and stored in a way that they blend and harmonize with the existing landscape. Again, management activities as seen from roads, recreation facilities, lodge and resort in general can dominate the visual landscape provided the blend with the surrounding landscape. The degree of visual impact from the project implementation will vary on a case by case basis dependent on aspect and distance from viewers. Implementation of the proposed action would likely result in temporarily exceeding the desired visual condition within the project area. However long term desired visual conditions will be attained shortly after project completion.

Effects

Alternative 1: No Action.

Direct and Indirect Effects

By taking no action and if no wildfires were to occur, the resort would continue to meet VQO Modification. The forest would appear natural to most casual observers, including tourists and general recreation visitors. Portions of conifer stands may continue to decline and die due to pests and disease, as experienced on other portions of the Forest, all of which may cause a reduction in the visual variety class for the project area.

In the event of a wildfire, the visual quality of the project area could be drastically altered, leaving black tree trunk skeletons and a scorched understory. In the long term, wildfires would result in cycling succession.

Alternatives 2 and 3: Proposed and Modified Proposed Action.

Direct and Indirect Effects

The effects from the proposed action will increase the overall visual disturbance on the project area. Most forest management activities, including this proposal, are greatest immediately following completion of the project. Within 5 years, vegetation would begin to grow, transitioning a change in color from brown to light green. Green tree retention in the project area would reduce the overall contrast of new growth with the surrounding forest. From 5 to 20 years post action, any young trees become established reaching a height of approximately 15 feet and further reducing the color contrast with adjacent forested areas. After 30 years, the emerging forest would achieve a mature height. Color contrast at this point is near that of old growth forest and only textural differences are

apparent. Edge lines forming the boundary of the ski runs also become less apparent; the appearance further reduced by symmetrical design.

Zip Line. The proposed zip line and towers are anticipated to be visible from certain locations on the North Fork highway, parking area, and lodge. Similar to the existing lift towers, they will be colored to blend with the natural surrounds. A preferred color would be olive green as used on the existing towers. The zip line course and towers will add little visual disturbance to the existing condition due to their location and adjacency to existing forest canopy. The overall visual impact will be evident but minimal after construction in term of scale, color, and form contrast as seen by forest visitors.

Tubing Hill. The tubing hill will be seen from the North Fork highway. Immediately following project implementation, scenic character and integrity would be altered and visual quality temporarily diminished from its current appearance. Some visible evidence of earthwork is anticipated. Over time, disturbed soils and vegetation will be reclaimed to a visually appealing landscape similar to the existing condition. After completion, the project is anticipated to blend and harmonize with the adjacent landscape in both the winter and summer months. Once established there will not be a discernible distinction between the implementation of the tubing hill and the existing condition.

3.11 Heritage Resources

Affected Environment

To fulfill Section 106 obligations, the Shoshone National Forest archaeologist researched past cultural resource investigations. The following table outlines previous surveys within and adjacent to the proposed project area:

Table 3.8. Previous cultural resource investigations in the project area.

<u>Year</u>	<u>Investigator</u>	<u>Project-Type</u>	<u>WYCRIS #</u>
1976	WY Office of the State Archaeologist for USDA FS	Grinnell Fence Project, Class III Survey	518
1984	WY Office of the State Archaeologist for USDAFS	North Fork Road Access Class III Block and Linear Survey	14591
1987	WY Office of the State Archaeologist for USDA FS	Cody-Yellowstone Highway, Class III Road/Access Linear Survey	17646
1993	USDA FS	North Fork Scenic By-Way Class III Linear Survey	30171
1993	WY Office of the State Archaeologist for USDA FS	North Fork Scenic By-Way Class III Block Survey	37773
1994	USDA FS	North Fork Nordic Ski Trail Class III Linear Survey	38927

1995	WY Office of the State Archaeologist for USDA FS	PREB-031-1(44) Pahaska-Wayfarer Monitor Class III Road/Access Linear Survey	25317
2004	Mettler and Associates for USDA FS	North Fork Mechanical Treatment Class II and III Block Survey	46651
2007	USDA FS	3 Mile Campground and Picnic Area Class III Block Survey	57909
2008	Terra Alta Archaeology for USDA FS	Sleeping Giant Ski Area Improvements Class II and III Block Survey	59042
2009	USDA FS	Grinnel Fence Project Class III Linear Survey	61150

Most relevant to this project would be the *Class III Cultural Resource Inventory of Yellowstone Recreation* (#R2008021400072; SHPO File #0608JPL011). This survey was conducted in 2008 by Terra Alta Archaeology for the Shoshone National Forest. No cultural properties or materials were observed during the course of the survey.

Cultural resources with ground surface and subsurface components have not been recorded within the boundaries the proposed Sleeping Giant Development project area. Cultural resources include historic and prehistoric artifact scatters, stone features (e.g., cairns, stone circles), trails, and historic structures.

Areas intensively surveyed for cultural resources in response to actions in the proposed project area were identified using criteria defined in the Programmatic Agreement (PA) among the USDA Forest Service, Wyoming Forests, Wyoming State Historic Preservation Officer, and Advisory Council on Historic Preservation Regarding Compliance with the National Historic Preservation Act on the National Forests and Grasslands of Wyoming (Region 2 Agreement # 09-MU-11020000-003).

Environmental Consequences

Effects Summary

As no Historic Properties are present within the project area, the proposed action will have no effect on Historic Properties eligible for or listed in the National Register of Historic Places.

Effects

Historic Properties

Alternative 1: No Action.

Direct and Indirect Effects

Under the No Alternative action there would be no undertaking and therefore no potential to affect historic properties.

Alternatives 2 and 3: Action Alternatives.

Direct and Indirect Effects.

As no Historic Properties are present within the project area, the proposed action will have no effect on Historic Properties eligible for or listed in the National Register of Historic Places.

Monitoring

If any cultural materials are discovered during ground disturbing activities for the tower construction, work in the area shall halt immediately, the federal agency must be contacted, and the materials evaluated by the Forest Archaeologist.

3.12 Climate Change

Affected Environment

The project area is categorized by a semi-arid climate with approximately 10 inches of precipitation annually and average July highs around 84.9 degrees Fahrenheit and average January lows around 12.9 degrees Fahrenheit. The 30 year average has increased approximately 1 degree over the past 100 years and has been associated with an increase in precipitation across the ecosystem. Forecasted climatic changes call for changes in flow regimes and other climate-environmental interactions that may result in undesirable ecosystem changes (Rice et al. 2012). The desired conditions are the ability to project the possible impact of projects on climate change and the impacts of climate change on the project area.

Environmental Consequences

Effects Summary

While there may be some contribution by the proposed action to greenhouse gas emissions and/or sequestration, the extent of those contributions is both very limited and cannot be quantified. The use of the most efficient and sustainable methods and materials is encouraged to minimize any project effects.

Effects

Alternative 1: No Action.

Direct and Indirect Effects.

The no action alternative will not contribute to climate change further than current operational standards.

Alternatives 2 and 3: Action Alternatives.

Direct and Indirect Effects.

Relative to the question of effects of the proposed actions on climate change; global standards and thresholds for greenhouse gas emissions and sequestration do not yet exist, thus there is no context from which to determine “significance” of project impacts at the scale of the proposed action. Numerous factors such as greenhouse gas mixing in the global atmosphere also make it currently impossible to determine the effects from the proposed action, affecting approximately 20 acres.

On the issue of climate change effects, climate change science is refining predictive change scenarios using vegetation, precipitation, and temperature modeling and the Shoshone National Forest has been a pilot for these efforts (Rice et al. 2012).

With the continued refinement of global models and more specific regional climate input, the ability to ascertain and understand climate change will improve with time. At this point we have modeled the general regional trajectory but are still unable to accurately predict the time scale of any manifestations and thus the extent and time scale of the proposed actions.

3.13 Cumulative Effects

Cumulative Effects of the Action Alternatives When Added to Past, Present, or Reasonably Foreseeable Future Actions

This section displays the additive or cumulative effects of the action alternatives when added to the past, present, or reasonably foreseeable future management actions within all jurisdictions. The action alternatives would not change the character, status, or classification of caves, wilderness areas, Research National Areas, National Wild and Scenic Rivers, or National Historic Trails as they are not present in the project area. Any contribution to adverse cumulative effects have either been eliminated or adequately mitigated through project design.

Vegetation: Sensitive Plants Cumulative Effects

The effects from Alternatives 2 and 3, when combined with other past, present, and reasonably foreseeable future activities does not have a substantial cumulative effect on known sensitive plant populations because there are none on the project area.

Vegetation: Weeds and Invasive Species Cumulative Effects

Under the ski area proposed development alternatives 2 and 3, proposed disturbance increases the risk of the spread of invasive or noxious weeds by soil disturbance. Project design/mitigation measures included with the action alternatives are designed to control any potential future weed expansion. Weed control programs conducted by the permittee, Cooperative Weed Management areas, Counties, and the Forest Service will attempt to control such increases. The effects from the development alternative, when combined with other past, present, and reasonably foreseeable future activities does not have a substantial cumulative effect on the spread of invasive species.

Wildlife Cumulative Effects

Big game hunting authorized by the state of Wyoming would continue to occur. Self-defense killing of grizzly bears by hunters is currently a significant source of mortality for the Yellowstone grizzly bear population (Gunther et al. 2004). There have been numerous hunting-related grizzly bear mortalities in the analysis area. Hunt Area 55 (which includes the entire Shoshone BMU) supported high numbers of elk and hunters during the 1990's and early 2000's, and conflicts between bears and backcountry elk hunters were common. Changes in elk hunting seasons are currently being proposed for this hunt area that will substantially reduce elk hunting opportunity. Although hunting-related conflicts and bear mortalities will still occur, fewer elk hunters will mean reduced

potential for bear mortality due to fewer opportunities for self-defense killings and attractant-related conflicts in backcountry hunting camps and front country trailheads (where numerous conflicts have been documented with bears obtaining livestock feed).

A variety of outfitter/guide activities are permitted in the analysis area. Bear-human conflicts have been recorded in backcountry outfitter camps, but there have been no bear mortalities related to attractants and outfitter camps over the past ten years.

Other forms of dispersed recreation and Forest Service permitted activities also occur in the analysis area, such as hiking, pack and saddle stock use on backcountry trails, use of motorized vehicles on open roads, firewood cutting, and others. These activities temporarily displace bears and have led to few bear-human conflicts.

The North Fork Highway was reconstructed and improved in the 1990's. Bears have been killed on the highway since that time, but these occurrences have been infrequent. Highway maintenance activities by the Wyoming Department of Transportation will also continue to occur, but will have discountable effects on bears.

Future activities that are reasonably foreseeable include further expansion of the Sleeping Giant facilities. A Master Development Plan has been submitted to the Shoshone National Forest that includes a planned expansion of the lodge and parking area. However, any future expansion would be subject to the developed site standard within the Conservation Strategy and would therefore require additional analysis and mitigation to compensate for the increased capacity.

Although occasional bear-human conflicts associated with the proposed action are likely and bear mortalities could occur, these are not expected to cause an overall increasing trend in conflicts and bear mortality within the analysis area.

Adequate quality and quantity habitat exists in the analysis area to support high densities of grizzly bears, despite the abundant human development along the North Fork corridor. The proposed zip line would have minor cumulative effects upon the availability and bear use of habitat in the Shoshone BMU.

Watershed Resources: Hydrology Cumulative Effects

Sediment

Past actions have impacted hydrologic conditions, such as using existing vegetation, stormwater controls such as rock, surface roughening features, and straw bales to control any stormwater runoff into water resources. Travelways used for structure maintenance have drainage structures that have been installed and maintained to prevent erosion and connectivity to water resources.

As early as spring of 2014, tree planting in the upland area of the ski hill would help stabilize soils, reducing possible sedimentation associated with the ski hill in general. There are no other past, present, or reasonably foreseeable future actions that overlap in impact with the proposed project effects. As long as the hillside vegetation and drainage structures are maintained and new measures are implemented, cumulative effects are expected to be insignificant.

Bed/Bank Stability

Previous to the initial ski area development, stream channel lateral migration on the North Fork Shoshone River in this area was moving south on the right bank. In part, the channel mobility was driven by the increase in large woody debris that has resulted from the effects of fire and beetle epidemic induced tree mortality. Drainage and snowmelt from the existing snowmaking west line saturates this same general area, and has the potential to continue to saturate this bank which will contribute to the existing natural sloughing. Specific BMPs for water dispersion may need to be implemented if snow making drainage is contributing to the bank instability.

Temp and Oxygen

As early as spring of 2014, tree planting in the upland area of the ski hill would stabilize soils, reducing possible sedimentation associated with the ski hill in general. There are no other past, present, or reasonably foreseeable future actions that overlap in impact with the Alternative 1 effects.

Watershed Resources: Fisheries Cumulative Effects

Fisheries Sensitive Species

As early as spring of 2014, tree planting in the upland area of the ski hill would stabilize soils, reducing possible sedimentation associated with the ski hill in general. There would be no other effects on YCT or MTS. There are no other past, present, or reasonably foreseeable future actions that overlap in impact with the proposed project effects.

Fisheries Management Indicator Species

As early as spring of 2014, tree planting in the upland area of the ski hill would stabilize soils, reducing possible sedimentation associated with the ski hill in general. There would be no other effects on game trout. There are no other past, present, or reasonably foreseeable future actions that overlap in impact with the proposed project effects.

Watershed Resources: Soils and Geologic Hazards Cumulative Effects

Past work at the ski hill involved slope alteration and clearing of ski runs. Future work is outlined in the ski area master plan.

The effects from Alternatives 2 and 3, when combined with other past, present, and reasonably foreseeable future activities will not have a substantial cumulative effect on geologic hazards and long term soil productivity when added to the existing conditions.

Fire and Fuels Cumulative Effects

Past vegetation and fuels management that occurred within the project area was the Canfield (2008), Ski Area Salvage (2008) and Grinnell Creek (2010) timber sales. These sales harvested a total of 124 acres within the 180 acre project area. There are no present or reasonably foreseeable actions that would alter the fuel loading indicators.

Silvicultural Resources Cumulative Effects

Past vegetation management that overlaps with the project area was primarily done through the Canfield (2008), Ski Area Salvage (2008) and Grinnell Creek (2010) timber

sales. These sales harvested a total of 124 acres within the 180 acre project area. There are no present or reasonably foreseeable actions that would alter the vegetation indicators.

Recreation Cumulative Effects

Since the reopening of the ski area, there has been an increase in winter recreation traffic. This is in part due to an increased amount of use on the Nordic ski trails as well. It can be expected that the zip line would bring in additional traffic resulting in an overall increase in recreational use in the project area throughout the year.

Visuals Cumulative Effects

Management activities at Sleeping Giant over the past 15 years have been significant. Some of those activities consist of vegetation management, parking expansion, small outbuilding construction, and stored operational equipment on site. Implementation of the proposed action within the project area is expected to occur over the next 5 to 10 years. During this period, the project area will be in a continuous state of transition. The landscape would be characterized as being a typical winter sports site. Visitors would expect to see ski runs, lift towers, small outbuildings, parking areas, the lodge, and maintenance facilities. The appearance of the activities associated with the proposed action would present a landscape slightly modified by this change.

Concerns regarding visual integrity in the project area, particularly around the current maintenance shop will be monitored for natural regeneration. If natural regeneration is adequate some screening of buildings, equipment and supplies could be expected within 10-15 years. Further screening would be achieved over another 10-20 years (20-45 years total) based on tree growth and infill from trees seeding in. If natural regeneration is inadequate following 5th year stocking surveys, the affected units would be scheduled for planting. Planting could occur in 2014-2016, and would add an additional 5-7 years to the timeframe listed above for natural regeneration.

CONSULTATION AND COORDINATION

The Forest Service consulted the following individuals, Federal, State, and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

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US Fish and Wildlife Service

Wyoming Department of Environmental Quality

Wyoming Game and Fish Department

APPENDIX A: LITERATURE CITED

Vegetation

FSM 2080 Noxious Weed Management

NRCS Plants Database: <http://plants.usda.gov/>

R2 Regional Sensitive Species List

R2 website Species assessment:

<http://www.fs.fed.us/r2/projects/scp/assessments/index.shtml/>

RNA / SIA Establishment Reports (Forest Planning Records)

Rocky Mountain Herbarium Laramie Wyoming website: <http://www.rmh.uwyo.edu/>

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APPENDIX B: PUBLIC COMMENTS

Within this appendix, we present a description of how scoping comments were analyzed and coded (Table 1), a summary of the scoping comments (Table 2). This summarizes public comment received and how they were considered in the development of this EA. For the scoping, IDT members paraphrased the comments; the intent was to capture the main intent of the comment. Comments that were used in describing a particular issue are noted in the issue column. The type column is one that we used to help us sort the comments. The disposition column briefly indicates how the comment is addressed in the analysis. How a comment is categorized is not important; our focus is ensuring that the comment is addressed.

Table 1. Type Code Descriptions

Type code	Type	Description
ALT	Alternative Development	Comments that could provide an alternative to the Proposed Action.
C	Concerns	These comments would be responded to by discussion in the comment disposition, project file, the EA, or in an appendix to the EA.
GS	General Statement	Comments expressing a statement or opinion and does not require a response.
OS	Outside Scope	Comments where a decision has already been made or is beyond the scope of the Proposed Action.
R	Request	Comment requests information or clarification. Does not necessarily indicate an issue or concern. Items requesting specific activities are coded with RA.
RD	Recommend Decision	These comments express a preference for a final decision, or an aspect of the decision. They would not generally be responded to in the analysis, but would be considered by the decision maker. These tend to be more general in nature than those items under RA.
RA	Recommend Other	These comments make recommendation related to specific Proposed Actions other than the decision, such as mitigation.

Table 2. Scoping Comment Summary

Source	#	Comment (paraphrased)	Issue or Concern	Type	Disposition
Alice Ahern	1	Opposed to the proposed zip line because it detracts from the wilderness experience.	Aesthetic	RD	The area does not lie within a wilderness designation and the proposed project meets the Forest Plan visual standards. For more details see visuals section of Chapter 3 of the EA.
Rosemary Alles	1	Opposed to the proposed zip line due to concerns over bear habitat.	Grizzly Bear	RD	The impact of the proposed zip line on grizzly bear habitat is analyzed as a part of the

Source	#	Comment (paraphrased)	Issue or Concern	Type	Disposition
					wildlife section of Chapter 3 of the EA.
Alliance for the Wild Rockies	1	We believe that the Forest Service must complete a full environmental impact statement (EIS) for this Project because the scope of the Project will likely have a significant individual and cumulative impact on the environment.	General	OS	It is unclear whether effects of this project would be significant, and thus we are exploring it with an EA.
Alliance for the Wild Rockies	2	Disclose all Forest Plan requirements for related to this project and explain how the project complies with them	Compliance	C	Compliance with Forest Plan is discussed in Chapter 1 of the EA.
Alliance for the Wild Rockies	3	Disclose how the unroaded areas adjacent to inventoried roadless areas will be surveyed for their wilderness characteristics.	Roadless	OS	The project takes place within the footprint of a developed area and not within roadless area designation.
Alliance for the Wild Rockies	4	Disclose the impact of climate change on the efficacy of the proposed treatments and the impact of the project on carbon storage potential.	Climate change	C	Climate change is discussed in Chapter 3 of the EA.
Alliance for the Wild Rockies	5	Please disclose all past projects in the area and their detrimental impacts to the project area.	Cumulative effects	C	See cumulative effects analysis in the EA.
Alliance for the Wild Rockies	6	Please include a detailed list of all the costs to the agency and the public.	General	OS	Much of the costs associated with this project are being handled as part of a cost share agreement. Beyond that, associated costs are outside the scope of this document.
Alliance for the Wild Rockies	7	State-of-the-art conservation biology and the principles that underlie the agency's policy of "ecosystem management" dictate an increasing focus on the landscape-scale concept and design of large biological reserves accompanied by buffer zones and habitat connectors as the most effective (and perhaps only) way to preserve wildlife diversity and viability.	General statement	GS	Thank you for your comment.
Alliance for the Wild Rockies	8	The task of management should be the reversal of artificial legacies to allow restoration of natural, self-sustaining ecosystem processes. If natural disturbance patterns are the best way to maintain or restore desired ecosystem values, then nature should be able to accomplish this task very well without human intervention.	General statement	GS	Thank you for your comment.
Alliance for the Wild Rockies	9	Disclose past compliance with monitoring requirements for the Forest Service.	Monitoring	OS	Monitoring relevant to the project is discussed in each resource section. Monitoring not relevant to this project is being addressed at the Forest Plan level and is beyond the scope of this document.
Alliance for	10	A description of any monitoring, specified in those past project NEPA documents	Monitoring	OS	No outstanding monitoring from past NEPA

Source	#	Comment (paraphrased)	Issue or Concern	Type	Disposition
the Wild Rockies		or the Shoshone Forest Plan for proposed project area, which has yet to be gathered and/or reported.			documents exists. Monitoring relevant to the project is discussed in each resource section. Monitoring not relevant to this project is being addressed at the Forest Plan level and is beyond the scope of this document.
Alliance for the Wild Rockies	11	Disclose and address the concerns expressed by the ID Team in the draft Five-Year Review of the Shoshone Forest Plan regarding the failure to monitor population trends of MIS, the inadequacy of the Forest Plan old growth standard, and the failure to compile data to establish a reliable inventory of sensitive species on Forest Service land in the Shoshone National Forest.	Monitoring	OS	TES and MIS concerns relevant to this project are discussed in Chapter 3 of the EA. Monitoring not relevant to this project is being addressed at the Forest Plan level and is beyond the scope of this document.
Alliance for the Wild Rockies	12	The results of all monitoring done in the project area as committed to in the NEPA documents of those past projects or as part of Forest Service monitoring and evaluation effort.	Monitoring	OS	BMP review records are included as part of the project record. Monitoring not relevant to this project is being addressed at the Forest Plan level and is beyond the scope of this document.
Alliance for the Wild Rockies	13	Disclose the acreages of past, current, and reasonably foreseeable logging, grazing, and road-building activities within the Project area	Silviculture/roads	C	Past timber activities are discussed in Chapter 3 of the EA. There is no past, present, or future grazing on the project area. No road building is planned for the project area.
Alliance for the Wild Rockies	14	Please disclose how the proposed “treatments” would be consistent with Graham, et al., 1994 recommendations for fine and coarse woody debris, a necessary consideration for sustaining long-term soil productivity.	Silviculture	OS	This project does not include timber treatments or prescribed burning and takes place on a developed site.
Alliance for the Wild Rockies	15	Solicit and disclose comments from the Wyoming Game and Fish Department regarding the impact of the Project on wildlife habitat	Wildlife	C	Scoping included WGFD, comments included here. WGFD will continue to be part of our analysis and review process.
Alliance for the Wild Rockies	16	Disclose the biological assessment for the candidate, threatened, or endangered species with potential and/or actual habitat in the Project area	Wildlife	C	A BA will be completed and submitted to the U.S. Fish and Wildlife Service for review and concurrence and will be part of the project record for this project.
Alliance for the Wild Rockies	17	Disclose the biological evaluation for the sensitive and management indicator species with potential and/or actual habitat in the Project area.	Wildlife/Fisheries	C	Sensitive and MIS species are discussed in the wildlife and aquatic life sections in Chapter 3 of the EA.
Alliance for the Wild Rockies	18	Disclose the amount of big game hiding cover, winter range, and security currently available in the area, during project implementation, and after implementation.	Wildlife	C	There is no big game winter range in the project area. This is discussed in the wildlife section Chapter 3 of the EA. Big game hiding cover and security are not issues for this project because there would be no vegetation

Source	#	Comment (paraphrased)	Issue or Concern	Type	Disposition
					management.
Alliance for the Wild Rockies	19	Please formally consult with the USFWS on the impact of the project on grizzly bears, lynx and wolverines.	Wildlife	C	The results of the FWS evaluation of the BA will determine the need for formal consultation.
Alliance for the Wild Rockies	20	Please consult with USFWS to see if the area qualifies as lynx critical habitat.	Wildlife	C	Lynx critical habitat is discussed in the TES section of Chapter 3 of the EA.
Alliance for the Wild Rockies	21	Please examine how this project could affect species listed under the Endangered Species Act.	Wildlife	C	TES are discussed in the wildlife section of Chapter 3 of the EA.
Alliance for the Wild Rockies	22	Please examine how this project will affect all MIS and sensitive species.	Wildlife/fisheries	C	MIS and sensitive species are discusses in Chapter 3 of the EA.
Alliance for the Wild Rockies	23	Solicit and disclose comments from the EPA regarding the impact of the project on water quality.	Hydrology	C	Water quality issues are handled by the Department of Environmental Quality in Wyoming. They have been consulted and comments are reflected in the hydrology section of Chapter 3 of the EA.
Alliance for the Wild Rockies	24	Disclose the Forest Service's record of compliance with state best management practices regarding stream sedimentation from ground-disturbing management activities.	Hydrology	C	Hydrology practices and recommendations are discussed in Chapters 2 and 3 of the EA. Former BMP reviews are part of the project record.
Alliance for the Wild Rockies	25	Disclose the baseline conditions (stability, pool frequency, and water temp range) and expected sedimentation during and after activities, for all streams in the area.	Hydrology	C	Hydrology concerns relevant to the project area are addressed in Chapter 3 of the EA.
Alliance for the Wild Rockies	26	Is there a NPDES permit from the E.P.A for culverts and ditches on Forest Service roads which may be a point source pollutant?	Hydrology	OS	This project involves no such structures and no new roads or water crossings are planned.
Alliance for the Wild Rockies	27	We request the FS design a restoration/access management plan for project area streams that will achieve recovery goals.	Hydrology	OS	No work occurs in the streambed and broader restoration goals are beyond the scope of this project.
Alliance for the Wild Rockies	28	Please disclose the locations of seeps, springs, bogs and other sensitive wet areas, and the effects on these areas of the project activities.	Hydrology	C	Ground disturbance for project activities does not interfere with seeps, springs, bogs, or other sensitive wet areas. Details on hydrology concerns are addressed in Chapter 3 of the EA.
Alliance for the Wild	29	Please disclose the link between current and cumulative soil disturbance in project area watersheds to the current and cumulative impacts on water quantity	Hydrology	C	Hydrology concerns are addressed in Chapter 3 of the EA.

Source	#	Comment (paraphrased)	Issue or Concern	Type	Disposition
Rockies		and quality.			
Alliance for the Wild Rockies	30	Please disclose if there are any WQLS streams or TMDL streams in the project area.	Hydrology	C	Hydrology concerns are addressed in Chapter 3 of the EA.
Alliance for the Wild Rockies	31	Disclose the results of the field surveys for threatened, endangered, sensitive, and rare plants in the project area and potential project impacts on these plants.	Vegetation	C	TES and rare plants are discussed in the vegetation section of Chapter 3 of the EA.
Alliance for the Wild Rockies	32	Disclose current and former noxious weed infestations in the project area; causes; current ecological, social, and ascetic impacts; potential direct, indirect, and cumulative project impacts; mitigation measures; and long term management plans.	Vegetation	C	Weed concerns are discussed in the vegetation section of Chapter 3 of the EA. Weed management not specific to the project area is beyond the scope of this document.
Alliance for the Wild Rockies	33	Disclose the impact of the proposed projects on native plant communities and plans for using native plants in restoration.	Vegetation	C	Native plants are discussed in the vegetation section of Chapter 3 of the EA.
Alliance for the Wild Rockies	34	Please provide an alternative that eliminates units that have noxious weeds present on roads within units from management proposals or prevents the spread of weeds.	Vegetation	OS	There is only one project unit. The no action alternative would represent continued weed management under the current special use permit.
Alliance for the Wild Rockies	35	Please visually disclose current noxious weed infestations which includes yellow and orange hawkweed, knapweed, Saint Johnswort, cheat grass, bull thistle, Canada thistle, hawkweed, hound's-tongue, oxeye daisy and all other Category 1, Category 2 and Category 3 weeds classified as noxious in the Idaho NOXIOUS WEED LIST	Vegetation	C	We believe that the commenter mistakenly placed the project area in Idaho. Wyoming weed concerns are addressed in the vegetation section of Chapter 3 of the EA.
Alliance for the Wild Rockies	36	What minimum standards are in the FOREST SERVICE management Plan to address noxious weed infestations?	Vegetation	C	Compliance with Forest Plan is discussed in Chapter 1 of the EA.
Alliance for the Wild Rockies	37	Please disclose how the productivity of the land been affected in the project area and Burley district wide due to noxious weed infestations, and how that situation is expected to change in the coming years and decades.	Vegetation	C	Weed concerns on the project area are discussed in the vegetation section of Chapter 3 of the EA. We are not in Idaho and cannot speak to conditions on the Burley district.
Alliance for the Wild Rockies	38	Please disclose the results monitoring of weed treatments on the Forest Service land that have been projected to significantly reduce noxious weed populations over time, or prevent spread.	Vegetation	C	Weed concerns are discussed in the vegetation section of Chapter 3 of the EA.
Alliance for the Wild Rockies	39	Disclose current and potential project related detrimental soil disturbance, and proposed remediation.	Soils	C	Soil disturbance is discussed in Chapter 3 of the EA.
Alliance for	40	Please disclose measures of, or provide scientifically sound estimates of,	Soils	OS	There is no planned off-road vehicle use.

Source	#	Comment (paraphrased)	Issue or Concern	Type	Disposition
the Wild Rockies		detrimental soil disturbance or soil productivity losses (erosion, compaction, displacement, noxious weed spread) attributable to off-road vehicle use.			
Alliance for the Wild Rockies	41	Disclose the actions being taken to reduce fuels on private lands adjacent to the project area and how those activities/or lack thereof will impact the efficacy of the activities proposed for this project.	Fire/fuels	OS	There are no private lands adjacent to the project area.
Alliance for the Wild Rockies	42	Will prescribed burning occur in the spring and early summer; please give justifications for this decision using current scientific studies as reference.	Fire	OS	Prescribed burning is not part of the proposed action.
Alliance for the Wild Rockies	43	What data do you have on wildfire frequency and how current is it?	Fire	OS	Records that do not pertain to the current project under consideration are outside the scope of this document.
Alliance for the Wild Rockies	44	Disclose maps of the area that show the following elements: <ol style="list-style-type: none"> 1. Past, current, and reasonably foreseeable logging units in the Project area; 2. Past, current, and reasonably foreseeable grazing allotments in the Project area; 3. Hiding cover in the Project area according to the Forest Plan definition; 4. Old growth forest in the Project area; 5. Big game security areas; 6. Moose winter range; 	Maps	OS	Maps are included where they are relevant and show resource information. Items 2-6 do not exist in the project area. Silvicultural resources are discussed in Chapter 3 of the EA.
Alliance for the Wild Rockies	45	We request a careful analysis of the impacts to fisheries and water quality, including considerations of sedimentation, increases in peak flow, channel stability, risk of rain-on-snow events, and increases in stream water temperature.	Fisheries	C	Fisheries and hydrology are addressed in Chapter 3 of the EA.
Alliance for the Wild Rockies	46	Please disclose in the NEPA document the results of up-to-date monitoring of fish habitat and watershed conditions and how this project will affect the fish in the project area.	Fisheries	C	There are no fish populations in the project area. Impacts to adjacent fish populations are discussed in the aquatic life section of Chapter 3.
Alliance for the Wild Rockies	47	Where livestock are permitted to graze, we ask that you assess the present condition and continue to monitor the impacts of grazing activities upon vegetation diversity, soil compaction, stream bank stability and subsequent sedimentation.	Grazing	OS	There is no grazing on or near the project area.
Alliance for the Wild Rockies	48	What impact does grazing have on sage grouse?	Grazing	OS	There is neither grazing nor sage grouse habitat on or near the project area.
Kim Barber	1	There is a concern that the proposed zip line and caretakers' housing will not be in accordance with the grizzly bear conservation strategy, specifically the prohibition on changes in type or extent of use for developed sites without	Grizzly Bear	C	As a part of the proposed project, the Blackwater picnic area would be removed to mitigate for the summer use of Sleeping Giant

Source	#	Comment (paraphrased)	Issue or Concern	Type	Disposition
		mitigation.			associated with the zip line. The previous removal of the Kitty Creek trailhead is also proposed as mitigation. For details see the wildlife section of Chapter 3 of the EA.
Kim Barber	2	There is a concern that mitigation measures to put the proposed project in compliance with the grizzly bear conservation strategy would not be equivalent to the project in type and extent.	Grizzly Bear	C	Mitigation measures as related to the grizzly bear conservation strategy are analyzed as a part of the wildlife section of Chapter 3 of the EA.
Kim Barber	3	There is a concern that mitigation measures would not be in place before the initiation of the project or included as an integral part of its completion.	Grizzly Bear	C	Any mitigation measures would be in place prior to the implementation of the project. For detailed analysis see the wildlife section of Chapter 3 of the EA.
Kim Barber	4	There is a concern about the how mitigation for the proposed project would be located within the same subunit.	Grizzly bear	C	Mitigation is addressed as part of the wildlife analysis in Chapter 3 of the EA.
Kim Barber	5	There is a concern that the Sleeping Giant picnic area has already been used as mitigation for a completed or approved project.	Grizzly bear	C	The approved project for which the Sleeping Giant capacity was used was the residence as approved in the original CE for the ski area. We are continuing to use it for this purpose.
Steve Bentjen	1	Opposed to the proposed zip line due to possible human bear conflicts and other wildlife concerns.	Grizzly bear/wildlife	RD	Human/bear conflicts and wildlife concerns are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Benjamin Beasley	1	Supportive of the proposed zip line. Expresses opinion that Sleeping Giant can implement the project with consideration to safety and environmental issues.	Expressed a supportive statement	RD	Thank you for your comment. This document represents the results of our environmental analysis.
Jessica Beverly	1	Opposed to the proposed zip lines due to potential harm to grizzly bears and habitat.	Grizzly bear	RD	Grizzly bear issues are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Steve Bentjen	1	Opposed to the proposed zip line due to possible human bear conflicts and other wildlife concerns.	Grizzly bear/wildlife	RD	Human/bear conflicts and wildlife concerns are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Amy Beukema	1	Opposed to the proposed zip line due to wildlife environment concerns.	Wildlife	RD	Wildlife concerns are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Yancy and Brad Bonner	1	Supportive of the proposed zip line.	Expressed a supportive statement	RD	Thank you for your comment.
Dick Briemeister	1	Opposed to the proposed zip line due to possible human bear conflicts and other wildlife concerns.	Grizzly bear/wildlife	RD	Human/bear conflicts and wildlife concerns are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Dick	2	Tourist attractions in a national forest setting near Yellowstone National Park	Aesthetic	C	The proposed project does not take place in

Source	#	Comment (paraphrased)	Issue or Concern	Type	Disposition
Briemeister		detract from the park experience.			the park or a wilderness area. For more detailed analysis of visual impacts see the visuals section of Chapter 3 of the EA.
Sophie Broussard	1	Supportive of the proposed zip line because of possible economic benefits and it existing in an already heavily trafficked corridor.	Expressed a supportive statement	RD	Thank you for your comment.
Mike Catterton	1	Supportive of the proposed zip line.	Expressed a supportive statement	RD	Thank you for your comment.
Donnie and DD Champlin	1	Supportive of the proposed zip line and its possible economic impact.	Expressed a supportive statement	RD	Thank you for your comment.
Kate Cox	1	Statement that the proposed action will negatively impact credibility.	Credibility	GS	Thank you for your comment.
Dana Cranfill	1	Supportive of the proposed zip line due to financial viability for Sleeping Giant.	Expressed a supportive statement	RD	Thank you for your comment.
Betty Daniels	1	Supportive of the proposed zip line and does not believe that the grizzly bear issue is significant.	Grizzly Bear/ Expressed a supportive statement	RD	Thank you for your comment. Grizzly bear and wildlife concerns are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Betty Daniels	2	Supportive because the attraction might mean extra time spent by tourists in the Cody area.	Expressed a supportive statement	RD	Thank you for your comment.
Jennifer Davis	1	Supportive of the proposed zip line due to economic stability, education opportunities, and opportunities to be active.	Expressed a supportive statement	RD	Thank you for your comment. Economic issues are discussed as part of the socioeconomic analysis, education as part of the wildlife analysis, and activities as part of the recreation analysis in Chapter 3 of the EA.
Jenny DeSarro	1	Supportive of the proposed zip line and its potential economic benefit.	Expressed a supportive statement	RD	Thank you for your comment.
Jenny DeSarro	2	Timing of use of the zip line would be during the day while Grizzly bears are crepuscular	Grizzly bear	RA	Timing of use for the proposed zip line is addressed in the proposed action in Chapter 1. Grizzly bear issues are analyzed as part of the wildlife section in Chapter 3 of the EA.
Jenny DeSarro	3	Impacts would be minimized because bears are adaptable and would remove themselves from the area during the day.	Grizzly bear	RA	Grizzly bear issues are analyzed as part of the wildlife section in Chapter 3 of the EA.

Source	#	Comment (paraphrased)	Issue or Concern	Type	Disposition
Jenny DeSarro	4	Mitigation could include prohibiting activities when bears are more vulnerable or more likely to be at low elevations.	Grizzly bear	RA	Season of use for the proposed zip line is addressed in the proposed action in Chapter 1. Grizzly bear issues are analyzed as part of the wildlife section in Chapter 3 of the EA.
Dina Frigo	1	Opposed to proposed zip line due to bear habitat and other wildlife habitat concerns.	Grizzly bear/wildlife	RD	Grizzly bear and wildlife habitat concerns are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Deborah Fuchs	1	Opposed to the proposed zip line due to concerns about grizzly bears and their habitat.	Grizzly Bear	RD	Grizzly bear habitat concerns are addressed as a part of wildlife analysis in Chapter 3 of the EA.
John Gallagher	1	Supportive of the proposed zip line and believes that the recovery status of the grizzly bear will not be significantly impacted by the zip line because it does not introduce activity more than 200 yards from the highway.	Grizzly Bear/ Expressed a supportive statement	RD	Thank you for your comment. Grizzly bear issues are analyzed as part of the wildlife section in Chapter 3 of the EA.
John Gallagher	2	Believes that the proposed zip line could be an opportunity for grizzly bear safety and awareness education	Grizzly bear	C	Grizzly bear education is discussed as part of the wildlife section in Chapter 3 of the EA.
Kenny Gasch	1	Supportive of the proposed action	Expressed a supportive statement	RD	Thank you for your comment.
Kenny Gasch	2	Recommends the scientific evaluation of concerns related to grizzly bears and balance be struck between wildlife and fiscal sustainability.	Grizzly bear	C	Grizzly bear issues are analyzed as part of the wildlife section in Chapter 3 of the EA. Economic issues are analyzed as part of the socioeconomic section of Chapter 3 of the EA.
Barbara Griffin	1	Opposed to the proposed zip line due to the potential negative impact on bear habitat and increased grizzly bear/human conflicts.	Grizzly bear	RD	Grizzly bear habitat concerns and grizzly/human conflicts are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Merrily Gumpel	1	Supportive of the proposed zip line and its potential economic benefits.	Expressed a supportive statement	RD	Thank you for your comment.
Ashea Mills	1	Opposed to the proposed zip line because of concerns about increased human presence and development in grizzly bear habitat.	Grizzly bear/wildlife	RD	Grizzly bear habitat and wildlife concerns are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Vickery Hall	1	Supportive of the proposed zip line.	Expressed a supportive statement	RD	Thank you for your comment.

Source	#	Comment (paraphrased)	Issue or Concern	Type	Disposition
Deb Harrison	1	Opposed to the proposed zip line due to bear habitat and other wildlife concerns.	Grizzly bear/wildlife	RD	Grizzly bear habitat and wildlife concerns are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Sharlene Harrison-Hinds	1	Opposed to the proposed zip line due to concerns about grizzly bear habitat and bear/human conflicts and other wildlife concerns.	Grizzly bear/wildlife	RD	Grizzly bear habitat concerns, grizzly/human conflicts, and wildlife concerns are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Karla Hart	1	Opposed to the proposed zip line due to bear habitat and other wildlife concerns.	Grizzly bear/wildlife	RD	Grizzly bear habitat and wildlife concerns are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Karla Hart	2	Zip lines do not encourage greater appreciation or understanding of nature.	Cultural values	GS	Thank you for your comment.
Buzzy Hassrick	1	Supportive of the proposed zip line with emphasis on protection of wildlife.	Expressed a supportive statement/ Wildlife	RD	Thank you for your comment. Wildlife concerns are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Roy Holm	1	Supportive of the proposed expansion projects.	Expressed a supportive statement	RD	Thank you for your comment.
Matthew Jackson	1	Supportive of the proposed zip line.	Expressed a supportive statement	RD	Thank you for your comment.
Dennis Kaleta	1	Opposed to the proposed zip line due to concerns about the contribution of the project to cumulative impacts on habitat and grizzly bears in general.	Grizzly bears	RD	Grizzly bear issues are analyzed as part of the wildlife section in Chapter 3 of the EA.
Sharon Kehoe Miller	1	Supportive of Sleeping Giant and the proposed zip line.	Expressed a supportive statement	RD	Thank you for your comment.
Coletta Kewitt	1	Supportive of the proposed zip line	Expressed a supportive statement	RD	Thank you for your comment.
E. Kiedrowski	1	Opposed to proposed zip line due to concerns about grizzly bear habitat.	Grizzly bears	RD	Grizzly bear habitat concerns are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Tara Kuipers	1	Supportive of the proposed zip line because it maximizes the use of the Sleeping Giant area.	Expressed a supportive statement	RD	Thank you for your comment.
Tara Kuipers	2	The impact to grizzly bears is important to consider, but she believes them to be minimal/unlikely.	Grizzly bears	GS	Grizzly bear issues are analyzed as part of the wildlife section in Chapter 3 of the EA.

Source	#	Comment (paraphrased)	Issue or Concern	Type	Disposition
Carrah LaSuer	1	Opposed to the proposed zip line due to wildlife habitat concerns.	Wildlife	RD	Wildlife concerns are analyzed as part of the wildlife section in Chapter 3 of the EA.
Fayette Latterell	1	Supportive of the zip line use unless grizzly bears are immediately present.	Expressed a supportive statement	RD	Thank you for your comment. Grizzly bear concerns are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Catherine Logan	1	Opposed to the proposed zip line due to concerns about interference with grizzly bears	Grizzly bears	RD	Grizzly bear concerns are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Gina Morrison	1	Supportive of the proposed zip line.	Expressed a supportive statement	RD	Thank you for your comment.
Gina Morrison	2	Opposed to limiting recreational opportunities on the forest.	Recreation opportunities	OS	Thank you for your comment.
Chuck Neal	1	Opposed to the proposed zip line because of potential loss of grizzly bear travel and habitat corridors and possible increases in human/bear conflicts.	Grizzly bear	RD	Grizzly bear habitat, travel corridors, and grizzly/human conflicts are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Jay Nielson	1	Supportive of the proposed zip line in the absence of significant impacts.	Expressed a supportive statement	RD	Thank you for your comment.
Julia Nielson	1	Supportive of the proposed zip line.	Expressed a supportive statement	RD	Thank you for your comment.
Werner Noesner	1	Supportive of the proposed zip line and believe that impacts on grizzly bears would be minimal	Expressed a supportive statement	RD	Thank you for your comment.
Werner Noesner	2	Believes that limiting WGFD release of problem bears is a possible mitigation.	Grizzly bears	OS	This issue is tangential to the proposed project. Grizzly bear concerns are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Werner Noesner	3	There is a concern that the proposed snow tubing area and individuals walking to it would interfere with use of the Nordic ski trail.	Recreation	C	The proposed tubing area would not interfere with use of the Nordic ski trail. Details of this analysis can be found in the recreation section of Chapter 3 of the EA.
Werner Noesner	4	Supportive of the proposed caretakers' housing	Expressed a supportive statement	RD	Thank you for your comment.
Park County Commissioners	1	Supportive of all aspects of the proposed action, especially expansion of recreation opportunities to the summer months	Expressed a supportive	RD	Thank you for your comment.

Source	#	Comment (paraphrased)	Issue or Concern	Type	Disposition
			statement		
Leslie Patten	1	The forest service needs to take into account the needs of wildlife in association with the proposed project.	Wildlife	C	Wildlife concerns are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Leslie Patten	2	There is a concern that the proposed zip line will displace bears and increase human/bear conflict.	Grizzly bear/wildlife	C	Grizzly bear habitat and grizzly/human conflicts are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Leslie Patten	3	There are enough tourists in the local area and another commercial enterprise is not needed.	Statement	GS	Thank you for your comment.
Elizabeth Radakovich	1	Supportive of proposed zip line and user of the existing ski area.	Expressed a supportive statement	RD	Thank you for your comment.
Wes Robertson	1	Supportive of the proposed projects because of potential for economic benefit and grizzly bear education opportunities.	Expressed a supportive statement	RD	Thank you for your comment. Economic impacts and education opportunities are discussed in Chapter 3 of the EA.
William Sandlin	1	Supportive of the proposed zip line.	Expressed a supportive statement	RD	Thank you for your comment.
Kelly Schermerhorn	1	Opposed to the proposed zip line due to possible human bear conflicts and bear habitat.	Grizzly bear	RD	Grizzly bear habitat and grizzly/human conflicts are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Karen Schipfmann	1	Supportive of the proposed zip line and does not believe that the grizzly bear issue is significant.	Grizzly Bear/ Expressed a supportive statement	RD	Thank you for your comment. Grizzly bear issues are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Kristi Schwartz	1	Opposed to the proposed zip line due to wildlife habitat concerns.	Wildlife	RD	Wildlife concerns are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Sean Sheehen	1	There is a concern about the possible negative impact of the proposed zip line on grizzly bears and their habitat.	Grizzly bear	C	Grizzly bear habitat concerns are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Sean Sheehan	2	There is a concern about noise pollution from the zip line and associated screams and other human noises.	Noise	C	There are currently no aesthetic standards for noise pollution in the Forest Plan.
George Simonton	1	There is a concern about the probability of fire in the area and the potential direct impact of fire on the proposed structures, insurability, and financial viability.	Fire	C	Fire issues are discussed as part of the analysis for the fire section of Chapter 3 of the EA. Structure design is discussed in Chapter 2 of the EA.
George Simonton	2	Opposed to any expansion outside the current scope of the project.	Habitat/ wilderness/	OS	Any future expansion plans would require a separate analysis and potential mitigation

Source	#	Comment (paraphrased)	Issue or Concern	Type	Disposition
			aesthetics		measures. No such measures are under consideration at this time.
George Simonton	3	There is a concern about the possibility of increased human/bear conflict.	Grizzly bear	C	Grizzly bear /human conflicts are addressed as a part of wildlife analysis in Chapter 3 of the EA.
George Simonton	4	There is a concern about the caretakers' residence re: occupancy season, parking, outdoor lighting, occupancy numbers, utilities, and economics.	Aesthetics/ Engineering/ Economics	C	The residence must comply with all local building codes as well as the Forest Service visual codes for partial retention areas. For details see the Proposed Action (Chapter 1) and the visuals section of Chapter 3 of the EA/
George Simonton	5	There is a concern about the impact of the caretakers' residence on wildlife.	Wildlife	C	Wildlife concerns are addressed as a part of wildlife analysis in Chapter 3 of the EA.
George Simonton	6	There is a concern about the economic viability of the project.	Economics	C	Socioeconomic impacts are discussed in Chapter 3 of the EA.
Colin Simpson	1	Supportive of the proposed zip line and believes that it is compatible with the Forest Service's multiple use directive.	Expressed a supportive statement	RD	Thank you for your comment.
Colin Simpson	2	Believes that grizzly bear impacts are minimal and can be mitigated.	Grizzly bear	GS	Grizzly bear impacts and mitigation are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Sandy Sisti	1	Opposed to the proposed zip line due to bear and moose habitat and other wildlife concerns.	Grizzly bear/wildlife	RD	Grizzly bear and other wildlife impacts are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Sandy Sisti	1	This appears to be an attempt to increase revenue for a business that is not financially solvent.	Statement	GS	Thank you for your comment.
Sarah Skiffington/ Creekside Lodge	1	Supportive of the proposed zip line and tubing hill.	Expressed a supportive statement	RD	Thank you for your comment.
Sarah Skiffington/ Creekside Lodge	2	Do not allow Sleeping Giant any over-night lodging or allow wedding receptions, family reunions, etc as it would conflict with existing lodges on the Northfork.	Economic competition	OS	Commercial over-night lodging is not part of the Proposed Action. Day –use for wedding receptions, family reunions, etc. at Sleeping Giant was authorized under their permit last year (2011) and is part of existing management and also not part of the Proposed Action for this analysis.
Kelly Statton	1	Supportive of the proposed zip line.	Expressed a	RD	Thank you for your comment.

Source	#	Comment (paraphrased)	Issue or Concern	Type	Disposition
			supportive statement		
Kelly Statton	2	Believes that existing summer maintenance and clean-up activities already disturb grizzly habitat and that the zip line would not increase impacts significantly.	Grizzly bear	GS	Grizzly bear impacts are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Kyle Tilden	1	Expressed that young people will likely be interested in the proposed zip line and this could be beneficial for them.	Expressed a supportive statement	GS	Thank you for your comment.
Val Walsh-Haines	1	Supportive of the proposed zip line.	Expressed a supportive statement	RD	Thank you for your comment.
Nikki Ward and CJ Dominick	1	Support the proposed zip line and Sleeping Giant.	Expressed a supportive statement	RD	Thank you for your comment.
Nikki Ward and CJ Dominick	2	Do not believe that the zip line would have an impact on grizzly bears	Grizzly bear	GS	Thank you for your comment.
Nikki Ward and CJ Dominick	3	The proposed zip line could provide an opportunity to educate visitors on the GYA ecosystem.	Wildlife/ Education	GS	Education opportunities are discussed as part of the Proposed Action (Chapter 1) and in the wildlife section of Chapter 3 of the EA.
Jeanette Webb	1	Opposed to the proposed zip lines due to potential harm to grizzly bears and habitat.	Grizzly bear	RD	Grizzly bear and habitat impacts are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Linda Williams	1	Opposed to proposed zip line due to wildlife and habitat concerns.	Wildlife	RD	Wildlife and habitat impacts are addressed as a part of wildlife analysis in Chapter 3 of the EA.
Ted Williams	1	Supportive of the proposed zip line to increase the financial viability of sleeping giant and create a healthy outdoor opportunity for youth.	Expressed a supportive statement	RD	Thank you for your comment. Recreation opportunities are discussed in Chapter 3 of the EA.
Ted Williams	2	Believes that the forest service can mitigate impacts to grizzly bears.	Grizzly bear	GS	Thank you for your comment.
Jen Winslow	1	Supportive of the proposed zip line.	Expressed a supportive statement	RD	Thank you for your comment.
Matt Winslow	1	Supportive of the proposed zip line.	Expressed a supportive statement	RD	Thank you for your comment.
Stan Wolz	1	Supportive of the proposed zip line.	Expressed a supportive	RD	Thank you for your comment.

Source	#	Comment (paraphrased)	Issue or Concern	Type	Disposition
			statement		
Stan Wolz	2	Favors more access to the forest and feels that the proposed project would provide that.	Access	GS	Thank you for your comment.
Wyoming Game and Fish Dept (WGFD)	1	The proposed project is in spring-summer-fall habitat for moose, deer, and bighorn sheep, but should have minimal impact on these big game populations.	Wildlife	GS	Thank you for your comment.
WGFD	2	To comply with mitigation standards within the grizzly bear primary conservation area: 1:1 mitigation by converting developed sites with similar levels of human activity within the PCA to nonactivity.	Grizzly bear	RA	
WGFD	3	Recommend additional enforcement of food storage regulations and Forest regulations that require visitors to stay 100 yards from grizzly bears.	Grizzly bear	RA	Grizzly bear related project design features are included either in the Proposed Action in Chapter 1 or as a part of wildlife analysis in Chapter 3 of the EA.
WGFD	4	Recommend additional grizzly bear education efforts that include one-on-one contact with Forest users.	Grizzly bear	RA	Grizzly bear related project design features are included either in the Proposed Action in Chapter 1 or as a part of wildlife analysis in Chapter 3 of the EA.
WGFD	5	Recommend keep all attractants (food, trash, BBQ grills, etc.) inaccessible to bears as per Forest regulations.	Grizzly bear	RA	Grizzly bear related project design features are included either in the Proposed Action in Chapter 1 or as a part of wildlife analysis in Chapter 3 of the EA.
WGFD	6	Recommend develop a Grizzly Bear Conflict/Encounter Prevention Plan (includes reporting requirements for bear activity, etc.) for the proposed project area.	Grizzly bear	RA	Grizzly bear related project design features are included either in the Proposed Action in Chapter 1 or as a part of wildlife analysis in Chapter 3 of the EA.
Zach/Akron Peace Project	1	Concerned about the impact of the proposed zip line on grizzly bear habitat and possibility of grizzly/human conflict.	Grizzly Bear	C	Grizzly bear habitat impacts and grizzly/human conflicts are addressed as a part of wildlife analysis in Chapter 3 of the EA.

APPENDIX C: FSH 2509.25, WATERSHED CONSERVATION PRACTICES

11 - HYDROLOGIC FUNCTION		
Management Measure	Design Criteria	Monitoring
		Check size and orientation of openings, extent of connected disturbed areas, and stream health (channel widths-depths, substrate, bank stability) of sensitive stream reaches.
11.1.1b	Design the size, orientation, and surface roughness (that is, slash and other features that would trap and hold snow on site) of forest openings to prevent snow scour and site desiccation.	
11.2.1a	Maintain the organic ground cover of each activity area so that pedestals, rills, and surface runoff from the activity are not increased. The amount of organic ground cover needed will vary by different ecological types and should be commensurate with the potential of the site.	Observe evidence of pedestals, rills, and surface runoff. Compare average organic ground cover of treated activity areas with reference areas, using ocular methods, rooted nested frequency method, cover-frequency method (USFS 1996a), soil pedon data, pace transects, or other accepted monitoring methods.
11.2.1b	Restore the organic ground cover of degraded activity areas within the next plan period, using certified local native plants as practicable; avoid persistent or invasive exotic plants.	
12 – RIPARIAN AREAS AND WETLANDS		
Management Measure	Design Criteria	Monitoring
12.1.1a	Allow no action that will cause long-term change to a lower stream health class in any stream reach. In degraded systems (that is At-risk or Diminished stream health class), progress toward robust stream health within the next plan period.	Monitor streambeds and banks, aquatic habitat and biota, soil structure, and riparian vegetation composition and structure.
12.1.1b	Allow no action that will cause long-term change away from desired condition in any riparian or wetland vegetation community. Consider management of stream temperature and large woody debris recruitment when determining desired vegetation community. In degraded systems, progress toward desired condition within the next plan period.	
12.1.1c	Keep heavy equipment out of streams, swales, and lakes, except to cross at designated points, build crossings, or do restoration work, or if protected by at	

	least 1 foot of packed snow or 2 inches of frozen soil. Keep heavy equipment out of streams during fish spawning, incubation, and emergence periods.	
12.1.1e	Locate new concentrated-use sites outside the WIZ if practicable and outside riparian areas and wetlands - Armor or reclaim existing sites in the WIZ to prevent detrimental soil and bank erosion.	
12.1.1m	Do not excavate earth material from, or store excavated earth material in, any stream, swale, lake, wetland, or WIZ.	
12.1.1.n	Emphasize natural stabilization processes consistent with the stream type and capability (Rosgen and Proper Functioning Condition processes) when restoring damaged stream banks. Use native vegetation for stream bank stabilization whenever practicable.	
12.2.1a	Install stream crossings to meet Corps of Engineers and State permits, pass normal flows, and be armored to withstand design flows.	Check stability and grade of crossings, capacity of channels, sediment deposits in streambeds, and ability of aquatic biota to pass (40 CFR 230.23 and 230.31).
12.2.1b	Size culverts and bridges to pass debris. Engineers work with hydrologists and aquatic biologists on site design.	
12.2.1c	Install stream crossings on straight and resilient stream reaches, as perpendicular to flow as practicable, and to provide passage of fish and other aquatic life.	
12.2.1d	Install stream crossings to sustain bankfull dimensions of width, depth, and slope and keep streambeds and banks resilient. Favor bridges, bottomless arches or buried pipe-arches for those streams with identifiable flood plains and elevated road prisms, instead of pipe culverts. Favor armored fords for those streams where vehicle traffic is either seasonal or temporary, or the ford design maintains the channel pattern, profile and dimension.	
12.3.1a	Add or remove rocks, wood, or other material in streams or lakes only if such action maintains or improves stream and lake health. Leave rocks and portions of wood that are embedded in beds or banks to prevent channel scour and maintain natural habitat complexity.	Monitor channel pattern, geometry, and stability; migration barriers; and aquatic habitat and biota.
12.3.1.b	Do not relocate natural stream channels if avoidable. Return flow to natural channels where practicable. Where reconstruction of stream channels is necessary, Construct channels and floodways with natural stream pattern and geometry and stable beds and banks, and provide habitat complexity.	
12.4.1a	Keep ground vehicles out of wetlands unless protected by at least 1 foot of packed snow or 2 inches of frozen soil. Do not disrupt water supply or drainage patterns into wetlands.	Monitor integrity of organic ground cover and organic soil layers, plant community composition and structure, soil structure, water levels, and drainage patterns.
12.4.1b	Keep roads and trails out of wetlands unless there is no other practicable alternative. If roads or trails must enter wetlands, use bridges or raised prisms with diffuse drainage to sustain flow patterns. Set crossing bottoms at natural levels of channel beds and wet meadow surfaces. Avoid actions that may dewater or reduce water budgets in wetlands.	
12.4.1c	Avoid long-term reduction in organic ground cover and organic soil layers in any wetland (including peat in fens).	
12.4.1d	When practicable, keep buried utility and pipelines out of wetlands. If such a line must enter a wetland, use measures that sustain long-term wetland function.	
12.4.1e	Avoid any loss of rare wetlands such as fens and springs.	
12.5.1a	Cooperate with water users and other interested parties to evaluate how to operate existing water use facilities to meet resource goals.	Monitor stream flow, stream health, and riparian condition.
12.5.1b	Obtain stream flows under appropriate federal and state, legal and regulatory authorities to protect stream processes, aquatic and riparian habitats and communities, and recreation and aesthetic values. Top priority is to protect imperiled native species. Generally, this will include a range of flows to support desired uses and values.	
12.5.1c	Upon issuance of special use authorizations for new or existing water use facilities, include permit conditions at the point of diversion or storage, if needed, to minimize impacts to water dependent resources and values. One or more of the following circumstances may be present in any given project.	

	<p>Water dependent resources and values not included on this list may require additional consideration.</p> <p>(1) When managing for physical stream processes, including channel maintenance, evaluate each stream on which a project is planned to ascertain what flows represent the amounts needed to sustain these functions. Essential attributes of a properly functioning self-maintaining channel include providing for flows to achieve the following:</p> <ul style="list-style-type: none"> (a) Move the mass and sizes of alluvial sediment supplied to the channel. (b) Maintain channel capacity by preventing terrestrial vegetative growth in the bed of the channel. (c) Protect and sustain channel banks and the floodplain by maintaining healthy streamside vegetation. (d) Maintain processes that sustain the relationship between the channel and the floodplain. <p>(2) When managing for aquatic biota and their habitat, evaluate each stream upon which a project is planned to ascertain what flows represent the amounts and timing needed to sustain viability of existing populations of native and desired non-native vertebrate species. Essential flow related attributes of sustainable habitat should achieve the following:</p> <ul style="list-style-type: none"> (a) Maintain the physical, biological, and chemical processes necessary for all life-history stages of identified species and communities. (b) Minimize the impact of dams and diversion structures on the interaction between populations. (c) Return flows to historic habitat where reintroduction potential exists. <p>(3) When managing for riparian habitat and communities, evaluate each stream upon which a project is planned to ascertain what flows and timing are needed to maintain or improve riparian habitat and community structure and function. These flows should be adequate to:</p> <ul style="list-style-type: none"> (a) Maintain the physical, biological, and chemical processes necessary to ensure the viability and ecological integrity of identified species and communities. (b) Maintain the magnitude, variability, and frequency of disturbance processes that affect community structure and function. <p>(4) When managing for aesthetic and recreational values, evaluate each stream upon which a project is planned to ascertain what flows represent the amounts and period needed to sustain these values. These flows should be adequate to:</p> <ul style="list-style-type: none"> (a) Support flow dependent recreation uses (for example, rafting, kayaking, swimming). (b) Maintain desired populations of fish species to provide for appropriate recreational experiences. (c) Provide water for aesthetic enjoyment. (d) Support special designations, including Wild and Scenic Rivers, where flowing water is critical to the purpose and quality of the designation. 	
12.5.1d	Obtain water rights under federal and state law to protect stream processes, aquatic and riparian habitats and communities, and recreation and aesthetic values. Top priority is to protect imperiled native species.	
12.6.1a	Design all ditches, canals, and pipes with at least an 80% chance of passing high flows and remaining stable during their life.	Monitor stream health below diversion and discharge structures. Check prompt remediation of water pipeline breaks and ditch failures. Inspect each facility in the
12.6.1b	Do not flush or deposit sediment from behind diversion structures into the stream below. Deposit sediment in a designated upland site. Vegetate or otherwise stabilize spoil piles.	
12.6.1c	Mitigate water imports and water disposal (including reservoir releases) so that the extent of stable banks, channel pattern, profile and dimensions maintain or improve long-term stream health in each receiving stream reach.	

		field at least once every two years to conform to the biennial reporting provisions of Clean Water Act Section 319(m).
12.6.1.d	Maintain and operate water conveyance ditches and pipelines to carry their design volumes of water with appropriate freeboard. Keep ditches clear of vegetation, debris or other obstructions to minimize potential for ditch failures.	
12.6.1.e	Conduct snow management, including snowmaking and snow-farming, in such a manner that prevents slope failures and gully erosion on the hillslopes and prevents adverse impacts, such as bank erosion and excessive sediment, in receiving streams.	
13 – SEDIMENT CONTROL		
Management Measure	Design Criteria	Monitoring
13.1.1b	Avoid soil-disturbing actions during periods of heavy rain or wet soils. Apply travel restrictions to protect soil and water.	Monitor travelway conditions, sediment movement into streams, and sediment effects on aquatic habitat and biota.
13.1.1c	Install cross drains to disperse runoff into filter strips and minimize connected disturbed areas. Make cuts, fills, and road surfaces strongly resistant to erosion between each stream crossing and at least the nearest cross drain. Revegetate using certified local native plants as practicable; avoid persistent or invasive exotic plants.	
13.1.1e	Retain stabilizing vegetation on unstable soils. Avoid new roads or heavy equipment use on unstable or highly erodible soils.	
13.1.1h	Designate, construct, and maintain recreational travelways for proper drainage and armor their stream crossings as needed to control sediment.	
13.1.1i	During and following operations on outsloped roads, retain drainage and remove berms on the outside edge except those intentionally constructed for protection of road grade fills.	
13.2.1b	Use filter strips, and sediment traps if needed, to keep all sand-sized sediment on the land and disconnect disturbed soil from streams, lakes, and wetlands. Disperse runoff into filter strips.	Monitor sediment movement into streams and sediment effects on aquatic habitat and biota.
13.2.1c	Key sediment traps into the ground. Clean them out when 50% full. Remove sediment to a stable, gentle, upland site and revegetate.	
13.2.1d	Keep heavy equipment out of filter strips except to do restoration work or build hardened stream or lake approaches. Yard logs up out of each filter strip with minimum disturbance of ground cover.	
13.2.1f	Design road ditches and cross drains to limit flow to ditch capacity and prevent ditch erosion and failure.	
13.3.1a	Do not encroach fills or introduce soil into streams, swales, lakes, or wetlands.	Monitor condition of cuts, fills, and ditches, effectiveness of filter strips, and runoff and sediment dispersion below cross drains. Monitor sediment movement into streams and sediment effects on aquatic habitat and
13.3.1b	Properly compact fills and keep woody debris out of them. Revegetate cuts and fills upon final shaping to restore ground cover, using certified local native plants as practicable; avoid persistent or invasive exotic plants. Provide sediment control until erosion control is permanent.	
13.3.1c	Do not disturb ditches during maintenance unless needed to restore drainage capacity or repair damage. Do not undercut the cut slope.	
13.3.1d	Space cross drains according to road grade and soil type as indicated below: (ex. 01). Do not divert water from one stream to another.	
13.3.1e	Empty cross drains onto stable slopes that disperse runoff into filter strips. On soils that may gully, armor outlets to disperse runoff. Tighten cross-drain spacing so gullies are not created.	

13.3.1f	<p>Armor rolling dips as needed to prevent rutting damage to the function of the rolling dips. Ensure that road maintenance provides stable surfaces and drainage.</p> <p style="text-align: center;"><u>13.3 - Exhibit 01</u> <u>Maximum Cross-Drain Spacing in Feet Based on Soil Types*</u></p> <table><tr><th rowspan="2">Road Grade (%)</th><th colspan="4">Unified Soil Classification - ASTM D 2487</th></tr><tr><th>ML, SM Extr. Erodible Silts-sands with little or no binder (d.g.)</th><th>MH, SC, CL Highly Erodible Silts-sands with moderate binder</th><th>SW,SP,GM,GC Mod. Erodible Gravels + fines & sands with little or no fines</th><th>GW,GP Low Erodible Gravels with little or no fines</th></tr><tr><td>1-3</td><td>600</td><td>1000</td><td>1000</td><td>1000</td></tr><tr><td>4-6</td><td>300</td><td>540</td><td>680</td><td>1000</td></tr><tr><td>7-9</td><td>200</td><td>360</td><td>450</td><td>670</td></tr><tr><td>10-12</td><td>150</td><td>270</td><td>340</td><td>510</td></tr><tr><td>13-15</td><td>120</td><td>220</td><td>270</td><td>410</td></tr></table> <p>*Adapted from original work on the Siuslaw National Forest documented in the Transportation Engineering Handbook of the Pacific Northwest Region, 1966. Original spacings were based on rainfall intensities of 1 to 2 inches per hour falling in 15 minutes. Soil groups and spacings have been modified, based partly on ditch erosion information in WRENSS, to better represent climate and soil regimes found in the Rocky Mountain Region.</p> <p>These are maximum spacings. They should be reduced if warranted by onsite factors such as expected road use, downslope stability and erosion hazards, and filter strip capability to trap runoff and sediment and conserve ground cover integrity given the extra water. Combine these spacings with common sense to place cross drains where damage to ditches, slopes, and streams will be minimized. For example, shorten or extend the spacing where needed to move a cross-drain outlet from a stream headwall to a convex slope.</p>	Road Grade (%)	Unified Soil Classification - ASTM D 2487				ML, SM Extr. Erodible Silts-sands with little or no binder (d.g.)	MH, SC, CL Highly Erodible Silts-sands with moderate binder	SW,SP,GM,GC Mod. Erodible Gravels + fines & sands with little or no fines	GW,GP Low Erodible Gravels with little or no fines	1-3	600	1000	1000	1000	4-6	300	540	680	1000	7-9	200	360	450	670	10-12	150	270	340	510	13-15	120	220	270	410	biota.
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13-15	120	220	270	410																																
13.3.1.i	Use minimum amount of sand, salt, and/or other de-icing substances (Mag-Chloride) as necessary to provide safe winter travel conditions. Design paved roads and parking lots to facilitate sand removal (that is, curbs or paved ditches). Use filter strips or other trapping methods to reduce movement of de-icing materials into near-by water bodies. Do not deposit sediment into streams or on streambanks along roads.																																			
13.3.1.j	During winter operations, maintain roads as needed to keep the road surface drained during thaws and break-ups. Perform snow removal in such a manner that protects the road and other adjacent resources. Do not use riparian areas, wetlands or streams for snow storage or disposal. Remove snow berms where they result in accumulation or concentration of snowmelt runoff on the road or erodible fill slopes. Install snow berms where such placement will preclude concentration of snowmelt runoff and will serve to rapidly dissipate melt water.																																			
13.4.1b	Remove all temporary stream crossings (including all fill material in the active channel), restore the channel geometry, and revegetate the channel banks using certified local native plants as practicable; avoid persistent or invasive exotic plants.	Monitor connected disturbed areas and culverts removed.																																		
13.4.1c	Restore cuts and fills to the original slope contours where practicable and as opportunities arise to re-establish subsurface pathways. Use certified local native plants as practicable; avoid persistent or invasive exotic plants. Obtain stormwater (402) discharge permits as required.																																			
13.4.1.d	Establish effective ground cover on disturbed sites to prevent accelerated on-																																			

	site soil loss and sediment delivery to streams. Restore ground cover using certified native plants as practicable to meet revegetation objectives. Avoid persistent or invasive exotic plants.	
14 – SOIL QUALITY		
Management Measure	Design Criteria	Monitoring
14.1.1b	Operate heavy equipment for land treatments only when soil moisture is below the plastic limit, or protected by at least 1 foot of packed snow or 2 inches of frozen soil.	Monitor extent of severely burned and detrimentally compacted, displaced, and eroded soil in those activity areas with the most disturbances.
14.1.1d	Allow dispersed winter motorized recreation when snow depths are sufficient to protect soils. Specify a minimum unpacked snow depth of 12 inches unless a site-specific analysis shows a different snow depth is adequate to protect soils. Allow use of snowcats or grooming machines when unpacked snow depths equal or exceed 18 inches. Evaluate special use permit conditions on a site specific basis.	
15 – WATER PURITY		
Management Measure	Design Criteria	Monitoring
15.1.1b	Locate vehicle service and fuel areas, chemical storage and use areas, and waste dumps and areas on gentle upland sites. Mix, load, and clean on gentle upland sites. Dispose of chemicals and containers in State-certified disposal areas.	Monitor water quality and location of pollutant sources.
15.2.1a	Install contour berms and trenches around vehicle service and refueling areas, chemical storage and use areas, and waste dumps to fully contain spills. Use liners as needed to prevent seepage to ground water. Prepare Spill Prevention Control and Countermeasure Plan per the requirements of 40 CFR 112.	Monitor water quality and status of runoff controls.
15.2.1e	Inspect equipment used for transportation, storage or application of chemicals daily during use period for leaks. If leaks or spills occur, report them and install emergency traps to contain them and clean them up. Refer to FSH 6709.11, chapter 60 for direction on working with hazardous materials.	
15.2.1.f	Report spills and take appropriate clean-up action in accordance with applicable state and federal laws, rules and regulations. Contaminated soil and other material shall be removed from NFS lands and disposed of in a manner according to state and federal laws, rules, and regulations.	